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Tawney's Century (1540-1640): the Roots of Modern Capitalist  
Entrepreneurship in England

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## Abstract

# TAWNEY'S CENTURY (1540 - 1640): the Roots of Modern Capitalist Entrepreneurship in England

John Munro (University of Toronto)

Richard Tawney (1880-1962), who taught at the London School of Economics from 1917 to 1949, was unquestionably one of the very most important economic historians that England has ever produced: so much so, indeed, that the era of his major research and publications, 1540 - 1640, has justly come to be known as 'Tawney's Century'. Those publications, and the debates that they provoked, concern the origins or roots of modern capitalism and (implicitly) capitalist entrepreneurship that were supposed to have been established in this century. Though the roots of those economic developments, in particular those leading to more modern forms of industrial capitalism, may indeed lie in that century, nevertheless the main thesis of this study is that most of their positive fruits are instead to be found in the ensuing century of 1640 - 1740, the century preceding the advent of the modern Industrial Revolution.

Tawney's seminal scholarship, towards these ends, was concerned with two major issues. The first considered in this study is his 1926 monograph: *Religion and the Rise of Capitalism*, which in part was designed to promote, in the English-speaking world, Max Weber's famous thesis (1905) on 'The Protestant Ethic and the Spirit of Capitalism'. Both works focused on how three elements of one Protestant sect in particular, the Calvinists (from 1536), came to influence so deeply that Protestant Ethic and new ethos of modern capitalism: Predestination, the Calling, and 'Worldly Asceticism'. The significance of this form of Protestantism in England is that Calvinists and other Non-Conformists or Dissenters, those who refused to conform to the Church of England after the 1660 royalist Restoration, constituted about one half of the known scientists, innovators, and entrepreneurs from the later 17<sup>th</sup> century and through the Industrial Revolution era (1760-1820), though constituting only 5 percent of the population. The debate concerns the roles of their restricted (legislated) minority status and of schools and superior educational systems that they had to establish, but also the applicability of the Weber-Tawney thesis, in explaining their superior economic performance. Tawney's second major issue was that of 'agrarian capitalism', along with the supposed 'rise of the gentry': involving the transfer of vast amounts of land from the old aristocracy, the crown and church together, and finally the free-holding yeomanry into the hands of a non-aristocratic upper class who were far more predisposed and able to engage in profit-maximizing agriculture, especially through enclosures and the technology of the New Husbandry. But if Tawney dates this shift from Henry VIII's Dissolution of the Monasteries, in 1536, this study contends that the real shift, but certainly a major shift, to 'agrarian capitalism', involving enclosures and the New Husbandry, again came only after the 1660s.

To provide a contrast to Tawney's work, this study examines two alternative theses on the origins of modern industrial capitalism within Tawney's century (1540-1640): (1) Earl Hamilton's thesis of 'Profit Inflation', one fully endorsed by Keynes; and (2) John Nef's 'Early Industrial Revolution in Tudor-Stuart England'. The Hamilton thesis is rejected in this study, with the contention that its true importance was to inspire Nef's counter-thesis: on the decisive shift from wood and charcoal fuels to coal fuels, which in turn required very major technological changes (in furnace designs), which in turn led to major increases in industrial scale, and (for Nef) to true 'industrial capitalism'. This study, noting the importance of Wrigley's similar thesis on a shift from an organic (wood-based) to an inorganic (coal-based) industrial economy, supports the essence of the Nef thesis — but only for the period after 1640 (with new data).

Finally, this study considers two other related changes so necessary for the development of early-modern capitalism, in this era: the development of the Full Rigged or Atlantic Ship (but from the 1450s) and the overseas joint-stock trading companies. Again, their major impact came after 1660, with the 'New Colonialism' (Hobsbawm) or 'Commercial Revolution' (Davis). The study also considers the history of the English joint stock companies, from the first joint-stock company, in overseas trade (the Muscovy Company of 1553) to the Bubble Act of 1720, which restricted their formation until 1825. Also included is their role in the so-called 'Financial Revolution' from 1694 to 1757 ('Pelhams's Conversion' of the national debt).

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## **TAWNEY'S CENTURY (1540 - 1640):**

### **the Roots of Modern Capitalist Entrepreneurship in England**

**John Munro (University of Toronto)**

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#### **Tawney and Schumpeter on the origins of modern capitalism and capitalist entrepreneurship**

Richard Tawney (1880-1962), who taught at the London School of Economics from 1917 to 1949 (serving as Professor of Economic History from 1931), was unquestionably one of the very most important economic historians that England has ever produced: so much so, indeed, that the era of his major research and publications, 1540 - 1640, has justly come to be known as 'Tawney's Century'.<sup>1</sup> Those publications concern in particular the scholarly debates about the origins or roots of modern capitalism and (implicitly) capitalist entrepreneurship that were supposed to be found in this century. Though the roots of those economic developments, in particular those leading to more modern forms of industrial capitalism, may indeed lie in that century, nevertheless most of their positive fruits are instead to be found in the ensuing century of 1640 - 1740, the century preceding the advent of the modern Industrial Revolution in Great Britain. While it may seem trite to cite Arnold Toynbee's thesis of 'challenge and response' as the key to understanding major historical changes, that thesis will be utilized in examining the nature of advances in 'capitalist' entrepreneurship, entrepreneurial innovations, and technological changes, in particular, in each of the major debate issues concerning Tawney's century.<sup>2</sup> Of course, many economic challenges do not elicit a response or not necessarily the appropriate responses.

First, however, it must be admitted that Tawney himself was not specifically concerned with the issue of modern capitalist 'entrepreneurship', and some reasons for this may be inferred from a classic essay by

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<sup>1</sup> F.J. Fisher, 'Tawney's Century', in F. J. Fisher, ed., *Essays in the Economic and Social History of Tudor and Stuart England: in Honour of R. H. Tawney* (Cambridge and New York: Cambridge University Press, 1961), pp. 1-14. See also Anthony Wright, *R. H. Tawney* (Manchester: Manchester University Press, 1987); Ross Terrill, *R.H. Tawney and His Times : Socialism as Fellowship* (London: Deutsch, 1974).

<sup>2</sup> See in particular Arnold J. Toynbee, *A Study of History*, 11 vols. (Oxford: Oxford University Press, 1963).

Joseph Schumpeter (1883-1950) on entrepreneurship. The word ‘entrepreneur’ is, of course, not English, but a French term (‘to undertake’ a business venture or enterprise); and, Schumpeter has observed that this word was first introduced in an economic treatise by the Irish-born French economist Richard Cantillon (1680-1734).<sup>3</sup> His views greatly influenced the French Physiocrats in general, and in particular Jean-Baptiste Say (1767-1832), whom Schumpeter credits with developing the theory of entrepreneurship: as ‘the agent that combines the others into a productive organism’. Despite the influence that Cantillon and the Physiocrats had upon Adam Smith, nevertheless, according to Schumpeter, ‘the leading or directing activity as a distinctive function plays a surprisingly small role in his analytic scheme of the economic process’, a criticism that Schumpeter levies at most of the ensuing Classical School during the nineteenth-century.<sup>4</sup> The first renowned economist to publicize and promote Cantillon’s views was evidently Stanley Jevons (1835-1882).<sup>5</sup>

Schumpeter’s own definition, important for this study, begins with Say’s views: ‘transforming or combining factors into products [and/services]’. Schumpeter comments further that: ‘If there is not necessarily any sharp dividing line between entrepreneurial activity and ordinary management’, nevertheless, ‘the distinction between adaptative and creative response to given conditions may or may not be felicitous, but it conveys .. an essential difference’; and, for Schumpeter, apt synonyms for an ‘entrepreneur’ are ‘business leader’ and ‘innovator’ – or those who prove successful in introducing and maintaining productive and profitable economic changes. Especially important for this study is Schumpeter’s view that ‘the

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<sup>3</sup> The treatise, written in France circa 1732, is: Richard Cantillon, *Essai sur la nature du commerce en général*, ed. and translated by Henry Higgs (New York: A. M. Kelly, 1964). See Joseph Schumpeter, ‘Economic Theory and Entrepreneurial History’, in Research Center in Entrepreneurial History, Harvard University, ed., *Change and the Entrepreneur: Postulates and Patterns for Entrepreneurial History* (Cambridge, Mass., Harvard University Press, 1949), pp. 63-84, republished in *Essays of J. A. Schumpeter*, ed. by Richard Clemence (Cambridge, Mass: Addison-Wesley Press, 1951), pp. 248-66; and Anthony Brewer, *Richard Cantillon: Pioneer of Economic Theory* (London: Routledge, 1992), pp. 249-50.

<sup>4</sup> Schumpeter (1949/1951), ‘Entrepreneurial History’, pp. 249-50: ‘What the businessman does in this system of Adam Smith is, therefore, to provide real capital and nothing else’.

<sup>5</sup> W. Stanley Jevons, ‘Richard Cantillon and the Nationality of Political Economy’, *Contemporary Review* 39 (January 1881).

entrepreneurial function need not be embodied in a physical person or and in particular in a single physical person'.<sup>6</sup> Together Schumpeter's views expressed here should justify the earlier reference to Toynbee's fruitful concept of 'challenge and response'.

Tawney, if more concerned with the origins and nature of modern 'capitalism' per se, nevertheless could hardly have addressed the many related issues without implicitly discussing issues to be found in the Schumpeterian concept of entrepreneurship. Tawney's primary concerns lay in examining or re-examining classic Marxist theses about the origins of modern English capitalism, and more specifically in the origins and nature of the English Civil War and Commonwealth era (1642-60), which, at least for many Marxists — though Tawney himself was not a Marxist — marks the final transition from a feudal to a modern capitalist society.<sup>7</sup>

Those origins, for Tawney, as noted earlier, were to be found in 'his' century, 1540 - 1640, which also experienced several other very important socio-economic changes, all of which have considerable bearing on the evolution of not just 'capitalism' but a more modern capitalist entrepreneurship as well. This century has commonly been viewed as well as the era of the European Price Revolution, though we now know that this long sustained inflation had begun earlier, ca. 1515-20, and lasted until about 1650.<sup>8</sup> This was also the era of the Protestant Reformations, which had also begun earlier, in 1517, when the German monk Martin Luther (1483-1546) published his 95 Theses; the other major figure was the French theologian Jean

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<sup>6</sup> Schumpeter (1949/1951), 'Entrepreneurial History', pp. 254-55.

<sup>7</sup> Tawney was a Fabian Christian Socialist — very different from any branch of Marxism. See n. 1 above.

<sup>8</sup> See John Munro, 'The Monetary Origins of the "Price Revolution:" South German Silver Mining, Merchant-Banking, and Venetian Commerce, 1470-1540', in Dennis Flynn, Arturo Giráldez, and Richard von Glahn, eds., *Global Connections and Monetary History, 1470 - 1800* (Aldershot and Brookfield, Vt: Ashgate Publishing, 2003), pp. 1-34; John Munro, 'Inflation', in Jonathan Dewald, et al, eds., *Europe, 1450-1789: Encyclopedia of the Early Modern World* (New York: Charles Scribner's Sons/The Gale Group, 2004), Vol. 3, pp. 262-265; John Munro, 'The Price Revolution', in Steven N. Durlauf and Lawrence E. Blume, eds., *The New Palgrave Dictionary of Economics*, 2<sup>nd</sup> edition, 6 vols. (London and New York: Palgrave Macmillan, forthcoming). These publications also discuss the now enormous literature on this subject.

(John) Calvin (1509-1564), who published his *Institutes of the Christian Religion* in 1536.<sup>9</sup>

### **The Weber-Tawney thesis on Protestantism and capitalism**

Tawney, having deeply held Christian views, became fascinated with the relationship between Protestantism and the origins of modern capitalism, or the ethos of modern capitalism. That led, in 1926, to the publication of perhaps his most famous book: *Religion and the Rise of Capitalism*.<sup>10</sup> While highly esteemed for the vast amount of new information that it supplied on both religion and society in sixteenth- and seventeenth century- England, the book's chief importance lies in explaining, elaborating on, and propagating the much earlier thesis on this issue, initially published (in 1905) in German: Max Weber, *The Protestant Ethic and the Spirit of Capitalism*.<sup>11</sup> Neither author, it must be stressed, ever proposed that Protestantism was responsible in any way for the actual birth of capitalism, for they were well aware that its origins were purely medieval. Furthermore, they were far from being the first scholars to make a link between Protestantism and modern capitalism, a linkage involving a wide variety of theories. Their goal was instead to provide an analytical framework, in the context of historical sociology, to explain how one particular form of Protestantism – Calvinism – ultimately influenced the development of the 'ethos' or 'spirit' or *mentalité* of modern European capitalism, in ways that distinguished it from earlier forms of capitalism. Weber and Tawney both agreed that Calvinism (ultimately) played such a role by the socio-

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<sup>9</sup> Jean Calvin, *Institution de la religion chrestienne*, 4 vols. (Paris: Société d'Édition 'Les Belles Lettres', 1961); Jean Calvin, *Calvin : Institutes of the Christian Religion*, 2 vols. (London: Westminster Press, 1960). See, inter alia, Georgia Harkness, *John Calvin: The Man and His Ethics* (New York, 1958); Roland Bainton, *The Reformation of the Sixteenth Century* (Boston, 1952); André Bieler, *La pensée économique et sociale de Calvin* (Geneva, 1959).

<sup>10</sup> Richard H. Tawney, *Religion and the Rise of Capitalism: A Historical Study* (London: 1926; reissued 1990).

<sup>11</sup> Max Weber, *Die Protestantische Ethik und der Geist des Kapitalismus* (Berlin, 1904-05); reissued in English translation as *The Protestant Ethic and the Spirit of Capitalism*, by Talcott Parsons (New York, 1930). Forward by Richard Tawney and Preface by Max Weber (pp. 1-31). See also Max Weber, *General Economic History*, translated by Frank H. Knight (New York: Collier Books, 1961), Part IV: 'The Origins of Modern Capitalism', pp. 207-70 (and especially chapter 320: 'The Evolution of the Capitalist Spirit', pp. 258-70). See also the following note.

psychological consequences of its three essential doctrines or components.

The first is the doctrine of Predestination, which in essence stipulates that God, being omnipotent, determines (has determined, will determine) who are the very few to be the so-called Elect: those who shall enjoy eternal salvation with God. All the rest of mankind, because of Original Sin and Free Will, have and will have condemned themselves to eternal perdition in Hell; and thus they are completely incapable of gaining salvation on their own.<sup>12</sup> Even for the most devout of faithful Calvinists, such a bleak doctrine must have seemed unpalatable, indeed horrifying. But Calvin scorned those who sought to find positive signs of their ‘Election’, replying that to do so was inherently sinful. A century or so later, however, that strict Calvinist view could and did no longer prevail: perhaps because of pressure of public opinion in predominantly Calvinist lands;<sup>13</sup> and perhaps because of the evolving impact of the other two doctrines of this Calvinist triad: in Weber’s terminology, the ‘Calling’ and ‘Worldly Asceticism’.

The doctrine of the ‘Calling’ was also based on the principle of God’s omnipotence, so that obviously the world existed according to His will, as He had ordained it; and thus it was the duty of every man and women to serve God by fulfilling his or her Calling - in whatever honourable (non-sinful) occupation one had gained — to exercise his/her utmost ability, in order to achieve the greatest possible degree of success in doing so.<sup>14</sup> Calvin himself had been trained as a lawyer, and deemed that to be an honourable Calling, as were not only those of other professional persons (e.g., doctors, professors, theologians), and craftsmen, but also businessmen, and thus entrepreneurs: merchants, financiers, industrialists, or common storekeepers and retailers, and industrial artisans, obviously all so necessary for the maintenance and prosperity of a well-ordered civil society. For many businessmen, what better, more tangible sign of success in one’s Calling

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<sup>12</sup> For the following, see sources cited in nn. 9 -11 above, and n. 15 below.

<sup>13</sup> See Andrew Pettegree, Alastair Duke, and Gillian Lewis, eds., *Calvinism in Europe, 1540 - 1620* (Cambridge and New York: Cambridge University Press, 1994); J. C. Riemersma, *Religious Factors in Early Dutch Capitalism* (London, 1967); David Little, *Religion, Order, and Law: A Study in Pre-Revolutionary England* (New York, 1969).

<sup>14</sup> See the sources in nn. 9-12 above, and n. 15 below.



could be found than profit? And that meant profit maximization, which surely is the very essence of modern microeconomics. As so many came to believe, such proof of success in one's Calling should also mean a positive, indeed certain, sign of one's Election. In turn, to the extent that so many in Calvinist societies came to equate such success in their Calling with Election, that society in turn came to view such success, and success in profitable business enterprises in particular, with far greater approval, as a socially desirable goal, than ever before.

Nevertheless, by the seventeenth and eighteenth centuries, an individual entrepreneur or businessman's success in his Calling, when measured by profits (or 'the bottom line', as many would say today), was strictly conditional on how that person utilised those profits, in terms of the Weber-Tawney concept of 'Worldly Asceticism'. If profits were spent largely on 'conspicuous consumption', such an individual risked incurring social opprobrium: i.e., for worshipping Mammon, and not God. If consuming profits in this fashion was sinful, then the obvious and most laudable alternative -- both socially and theologically -- was to reinvest those profits in the business enterprise: i.e., to increase the capital stock and scale of the enterprise, better enabling the entrepreneur to increase subsequent profits, and thus better able to be dedicated to one's Calling, for the greater glorification of God.

The Weber-Tawney thesis has, of course, engendered an enormous amount of debate since the 1920s, continuing to the present day; and a re-examination of that debate would serve no useful purpose in this study.<sup>15</sup> In my own view, whether or not the Weber-Tawney thesis has any real significance for the history

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<sup>15</sup> See in particular: Hartmut Lehmann and Guenther Roth, eds., *Weber's Protestant Ethic: Origins, Evidence, Contexts*, Publications of the German Historical Institute (Cambridge and New York: Cambridge University Press, 1985); Stephen P. Turner, ed., *The Cambridge Companion to Weber* (Cambridge: Cambridge University Press, 2000), in particular Jon Elster, 'Rationality, Economy, and Society', pp. 21-41; Alastair Hamilton, 'Max Weber's *Protestant Ethic and the Spirit of Capitalism*', pp. 151 -71; Stanley Engerman, 'Max Weber as Economist and Economic Historian', pp. 256- 71; Philippe Besnard, ed., *Protestantisme et capitalisme: la controverse post-Weberienne* (Paris, 1970); John H. Munro, 'The Weber Thesis Revisited -- and Revindicated?', *Revue belge de philologie et d'histoire*, 51 (1973), 381-91: a review article based on Besnard; A. Mitzman, *The Iron Cage: An Historical Interpretation of Max Weber* (New York, 1970); Joseph A. Schumpeter, 'Max Weber's Work', in Richard Swedberg, ed., *Joseph A. Schumpeter: The Economics and Sociology of Capitalism* (Princeton: Princeton University Press, 1991); Ephraim Fischhoff, 'The Protestant Ethic and the Spirit of Capitalism: The History of a Controversy', *Social*

of entrepreneurship in England, and for the evolution of a more truly ‘capitalist’ economy, the relevance will be found not in ‘Tawney’s century’ itself – when so many Calvinists seemed to be more hostile to capitalism (and usury) – but rather in the succeeding century, 1640 - 1740.<sup>16</sup> First, during the era of the English Civil War and Cromwellian Commonwealth (1642-60), Calvinists – both English Puritans and Scottish Presbyterians – played a very major role in winning that war against the crown and the Cavalier or royalist factions; and furthermore, in then governing England during the Commonwealth and in altering the nature of the established Church of England.<sup>17</sup> But when the royalists succeeded in forcing Oliver Cromwell’s

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*Research*, 11 (1944), 61-77; Christopher Hill, ‘Protestantism and the Rise of Capitalism’, in F.J. Fisher, ed., *Essays in the Economic and Social History of Tudor and Stuart England: in Honour of R. H. Tawney* (London, 1961), pp. 15-39; Hubert Luthy, ‘Calvinisme et capitalisme: après soixante ans de débat’, *Cahiers Vilfredo Pareto*, 2 (1963); republished in Hubert Luthy, *Le passé présent* (Monaco, 1965); H. Luthy, ‘Once Again: Calvinism and Capitalism’, *Encounter*, 22 (1964); S. N. Eisenstadt, ed., *The Protestant Ethic and Modernization: A Comparative View* (New York, 1968); J. H. Van Stuivenberg, ‘The Weber Thesis: Attempt at Interpretation’, *Acta Historiae Neerlandicae*, 8 (1975), 50-66; S. A. Burrell, ed., *The Role of Religion in Modern European History* (New York, 1964); M. J. Kitch, ed., *Capitalism and the Reformation* (London, 1967). For the chief critics, see also: H.M. Robertson, *Aspects of the Rise of Economic Individualism: A Criticism of Max Weber and His School* (London, 1933); Amintore Fanfani, *Catholicism, Protestantism, and Capitalism* (London, 1935); and especially Kurt Samuelsson, *Religion and Economic Action* (London, 1961).

<sup>16</sup> For some of the literature on the relationship between Protestantism and a new ‘capitalism’ in Tawney’s century, to 1640, in both England and Scotland, see the sources in n. 15, and also: E.L. Jones, ‘Capitalism: One Origin or Two?’, *Journal of Early Modern History: Contacts, Comparisons, Contrasts*, 1:1 (February 1997), 71-76; C. and K. George, ‘Protestantism and Capitalism in Pre-Revolutionary England’, *Church History*, 28 (1958); S.A. Burrell, ‘Calvinism, Capitalism, and the Middle Classes’, *Journal of Modern History*, 23 (1960); Christopher Hill, *Society and Puritanism in Pre-Revolutionary England* (London, 1964); Robert Ashton, ‘Puritanism and Progress’, *Economic History Review*, 2nd ser., 17 (April 1965), 579-87: A critique of Christopher Hill’s writings on this theme; H. R. Trevor Roper, *Religion, the Reformation, and Social Change* (London, 1967); Little, *Religion, Order, and Law*; Gordon Marshall, *Presbyteries and Profits: Calvinism and the Development of Capitalism in Scotland, 1560-1707* (London, 1980); Christopher Durston and Jacqueline Eales, ed., *The Culture of English Puritanism, 1560 - 1700* (London and Basingstoke: MacMillan, 1996). But, for another valuable perspective, see Laura O’Connell, ‘Anti-Entrepreneurial Attitudes in Elizabethan Sermons and Popular Literature’, *Journal of British Studies*, 15 (1976). For the usury question, see below, pp. 15-18 and nn. 34-39.

<sup>17</sup> See, *inter alia*, Felicity Heal and Rosemary O’Day, *Church and Society in England: Henry VIII to James I* (London, 1977); Rosemary O’Day, ed., *The Debate on the English Reformation* (London, 1986); J. T. Cliffe, *The Puritan Gentry* (London, 1984); J. T. Cliffe, *Puritans in Conflict: The Puritan Gentry during and after the Civil Wars* (London: Routledge, 1988); Durston and Eales, ed., *The Culture of English Puritanism, 1560 - 1700*; Cicely V. Wedgwood, *The King’s Peace, 1637-1641, the Great Rebellion* (London: Collins Fontana: 1970); Cicely V. Wedgwood, *The King’s War, 1641-1647* (London, Collins: 1966), Cicely V.

indolent son Richard to abdicate and in restoring King Charles II (1660-1685) to the throne, the ensuing Restoration Parliaments enacted two statutes to rid England of any Calvinist, and therefore ‘Republican’, influences within the English Church and governments (national and local): the Corporation Act of 1661 and the Test Act of 1673.<sup>18</sup> Together these statutes required anyone seeking to hold any Church or government-related position (including the army, local justices, education, etc.) to swear oaths to conform to the 39 Articles of the Church of England and to take communion annually within the established Church. Those Protestants who refused to do so were thus known as Non-Conformists or Dissenters. Along with Calvinists and Presbyterians, this group included such other Protestant sects as Baptists, Quakers, Unitarians and later the Methodists.<sup>19</sup> When, however, the Catholic King James II (1685-88) was deposed in the Glorious Revolution, his successors, his daughter Mary II (1689-94) and her husband the Dutch prince William III of Orange (1689-1702) insisted that Parliament protect the religious rights of his Calvinist co-religionists, in the Toleration Act of 1689 (which did not include Catholics or Unitarians).<sup>20</sup> That Act did not, however, annul

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Wedgwood, *Oliver Cromwell and the Elizabethan Inheritance* (London: J. Cape, 1970).

<sup>18</sup> The Corporation Act, 1661: statute 13 Car. II c. 1 was the initial stage of the Earl of Clarendon’s programme to reassert Anglican supremacy after the Restoration: it required anyone holding municipal office to qualify by taking communion with the Church of England. The Test Act, 1673: 25 Car. II c. 2 required all office-holders under the crown, including Members of Parliament, to receive communion according to the rites of the Church of England at least once a year, and to make a declaration against the Catholic doctrine of ‘transubstantiation’. Neither was repealed until 1828, which repeal was followed by the Catholic Emancipation Act of 1829.

<sup>19</sup> The Unitarians, who denied the divinity of Christ, owed their origins to the sixteenth-century Italian theologian Lelio Sozzini (1525-62), whose followers, principally in Poland (to which Sozzini had fled), were called Socinians. The Methodists were founded by John and Charles Wesley, at Oxford’s Holy Club, in 1729 (nicknamed ‘Methodists’ by critics).

<sup>20</sup> More, formally, The Act of Toleration, enacted on 24 May 1689, as statute 1 William & Mary, c. 18, was entitled: ‘An Act for Exempting their Majestyes Protestant Subjects dissenting from the Church of England from the Penalties of certaine Lawes’. It included all non-Conformists except Unitarians. See also Esther Mijers, *Redefining William III: the Impact of the King-stadholder in International Context* (Aldershot: Ashgate, 2007); Wouter Troost, *William III the Stadholder-King: a Political Biography* (Aldershot: Ashgate, 2005); Tony Claydon, *William III* (London: Longman, 2002). William’s rule and the victory of the Glorious Revolution was not ensured, however, until William III’s victory over James II and his Irish armies, at the Battle of the Boyne, in 1690. See the intriguing essay by Jack A. Goldstone, ‘Europe’s Peculiar Path: Would the World Be “Modern” if William III’s Invasion of England in 1688 Had Failed?’, in Philip E. Tetlock, Ned

the provisions of the Corporation and Test Acts, so that Dissenters remained barred from all the aforementioned government, and government-related and Church-related, positions and schools.

The economic significance, especially for the history of entrepreneurship, of these developments is that Non-Conformists or Dissenters accounted for a remarkably high proportion – as much as one half – of the scientists and inventors listed in the Royal Society (founded 1660) and the related Lunar Society of Birmingham (founded 1764);<sup>21</sup> and, more importantly, they also account for at least half of the known entrepreneurs (and other business leaders) of the Industrial Revolution era, up to ca. 1820. Yet Dissenters were then a very small minority: consisting of about 1250 congregations in eighteenth-century England, comprising about 5 percent and certainly under 10 percent of the population.<sup>22</sup>

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Lebow, and Geoffrey Parker, eds., *Unmaking the West: 'What-If Scenarios' That Rewrite World History* (Ann Arbor, Michigan: University of Michigan Press, 2006), pp. 168-96.

<sup>21</sup> The most important study is: Robert K. Merton, *Science, Technology, and Society in Seventeenth-Century England*, revised edn. (New York, 1970), especially chapter IV: 'Puritanism and Cultural Values', pp. 55-79; and Chapter VI: 'Puritanism, Pietism, and Science', pp. 112-36. See also Robert K. Merton, 'Science, Technology, and Society in Seventeenth-Century England', *Osiris*, 4 (1938), 360-78; Robert K. Merton, 'Puritanism, Pietism, and Science', in Robert K. Merton, ed., *Social Theory and Social Structure*, rev. edn. (New York, 1957), pp. 574-606; Isidor Thorner, 'Ascetic Protestantism and the Development of Science and Technology', *American Journal of Sociology*, 58 (1952), 25-33; S. F. Mason, 'Science and Religion in Seventeenth-Century England', *Past and Present*, no. 3 (Feb. 1953), 28-44; Hill, *Society and Puritanism*; Christopher Hill, *The Intellectual Origins of the English Revolution* (Oxford, 1965); Christopher Hill, 'William Harvey and the Idea of Monarchy', *Past & Present*, no. 27 (Apr. 1964), 54-7; Christopher Hill, 'Puritanism, Capitalism, and the Scientific Revolution', *Past & Present*, no. 29 (Dec. 1964), 88-97; H. F. Kearney, 'Puritanism, Capitalism, and the Scientific Revolution', *Past & Present*, no. 28 (July 1964), 81-101; H. F. Kearney, 'Puritanism and Science: Problems of Definition', *Past & Present*, no. 31 (July 1965), 104-110; Theodore K. Rabb, 'Religion and the Rise of Modern Science', *Past & Present*, no. 31 (July 1965), 111-26; Christopher Hill, 'Science, Religion and Society in the Sixteenth and Seventeenth Centuries', *Past & Present*, no. 32 (Dec. 1965), 110-12, providing comments on both Kearney and Rabb; Theodore K. Rabb, 'Science, Religion and Society in the Sixteenth and Seventeenth Centuries', *Past & Present*, no. 33 (April 1966), 148: a note in reply to Hill; Albert E. Musson and Eric Robinson, 'Science and Industry in the Late Eighteenth Century', *Economic History Review*, 2nd ser., 13 (1960), 222-45; Albert E. Musson and Eric Robinson, *Science and Technology in the Industrial Revolution*, (Toronto: University of Toronto Press, 1969); Albert E. Musson, *Science, Technology, and Economic Growth in the Eighteenth Century* (London, 1972): his collected essays; Ritchie Calder, *Profile of Science* (London: Allen and Unwin, 1953).

<sup>22</sup> See Davis Ralph, *Rise of the Atlantic Economies* (Ithaca, New York: Cornell University Press, 1973), p. 310: 'Dissent was strongest in northern and Midland England, where industry was growing most rapidly, and an extraordinarily high proportion of known inventors, innovators, and successful entrepreneurs of the later eighteenth century have been shown to be Dissenters'. See also Thomas S. Ashton, *The Industrial*

One obvious explanation for that disproportionate role is their minority status: yet one without the burden of true oppression, in enjoying that ‘half-way’ house of full religious but only partial social toleration. Thus their obvious challenge. Finding themselves excluded from the normal avenues of wealth, power, and social prestige, now available only to members of the Established Church of England, the Dissenters instead sought to succeed and prosper in alternative avenues that did remain open to them: namely, in the worlds of business enterprise, commerce, and finance, and industry (but also commercial agriculture). Perhaps they also experienced a deep psychological compulsion and social drive to prove themselves, both in their own eyes and in the eyes of society: so that such minority status did not mean inferior social status.

Another explanation, one that T.S. Ashton has offered, is ‘the fact that, broadly speaking, the Nonconformists constituted the better educated section of the middle classes’, which was chiefly due to the role of the ‘Dissenting Academies’.<sup>23</sup> They were the educational institutions that the Dissenters had been forced to establish, after having been barred from the traditional Church and state sponsored schools and universities. Many of these Academies were modelled after Scottish Presbyterian schools, which, in Ashton’s view (endorsed by many others), were ‘in advance of that of any other European country at this time’, as were Scottish universities.<sup>24</sup> Such schools focussed upon or emphasized mathematics, the physical and biological sciences, modern languages (English, French, and German especially). Also included in the curriculum were such ‘practical’ subjects as accounting, surveying, engineering. Necessarily eschewed – if

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*Revolution, 1760 - 1830* (London, 1948), pp. 17-21, observing that ‘the growth of industry was connected historically with the rise of groups which dissented from the Church...’

<sup>23</sup> Ashton (1948), *Industrial Revolution*, p. 19.

<sup>24</sup> *Ibid*, p.19, noting that ‘this view is supported by a consideration of the part played ... by the stream of energy that poured into England from Presbyterian Scotland after (though not immediately after) the Union of 1707’. See Arthur Herman, *How The Scots Invented the Modern World* (New York: Three Rivers Press, 2001), especially chapter 12: ‘Scots in Science and Industry’, pp. 320-44. The author (PhD Johns Hopkins) is co-ordinator of the Smithsonian Institution’s Western Heritage Program, and formerly Professor of History at George Mason University and Georgetown University. See also E.G. West, *Education and the Industrial Revolution* (London: B.T. Batsford, 1975), especially chapter 6, ‘Scottish Elementary Education’, pp. 59-73; and also Rosemary O’Day, *Education and Society, 1500 - 1800: The Social Foundations of Education in Early Modern Britain* (London, 1982).

only on grounds of opportunity cost – were the long traditional subjects favoured by Church of England schools, ‘public’ (i.e., private), and state grammar schools: Greek and Latin language and literature, philosophy, theology, and history. Even if history and Latin were also taught in the Dissenting Academies, they were not taught within the same framework (theological) and emphasis; for indeed many Dissenters viewed Latin with some suspicion as still the fundamental language of the Catholic church.

In Ashton’s view, and certainly in the view of many other historians, the education offered by the Scottish schools and the English Dissenting Academies was one more in tune with the objectives of the post-1660 ‘Scientific Revolution’ and then of the British Industrial Revolution, and one more likely to inspire both profitable innovations and entrepreneurship in both. Nevertheless, this Ashton thesis does not really tell us why these schools were so much more different from and better than the traditional schools: why in particular they were so much oriented to the worlds of science and business. One answer may be that those designing the curriculum in the Scottish schools and Dissenting Academies were not encumbered by centuries of tradition and Church-sanctioned and aristocratic social requirements. Another may be the market demand: that most of the students came from predominantly middle-class families that were then involved in the world of business, commerce, finance, and engineering.

Even to the extent that both explanatory models are valid, they do not permit us to discard the essence of the Weber-Tawny thesis, in particular the *subsequent* ways in which English society, in the later seventeenth, eighteenth, and early nineteenth centuries, came to interpret the Calvinist doctrines discussed above. For some better historical perspective, let us recall that in France, in 1685 – just four years before William III’s Toleration Act – King Louis XIV had revoked the Edict of Nantes, which Henry IV (a Calvinist forced to convert to Catholicism to gain the throne), had promulgated in April 1598, in order to grant full religious rights and full civil liberties to France’s Protestant Huguenots, thereby ending the country’s horribly divisive and destructive Wars of Religion (1562-1598). The Revocation of the Edict of Nantes soon led to the expulsion or emigration of a high proportion of the nation’s Huguenots, so many of whom were, like the

Dissenters, disproportionately active in French trade, commerce, and banking.<sup>25</sup> While many refugee Huguenots fled to Protestant Holland and Protestant German states, some also came to England, where they also made valuable contributions to the growth of the English business community, in trade and banking in particular.<sup>26</sup>

Stanley Chapman, in his impressive monograph on *Merchant Enterprise in Britain*, provides much additional supporting evidence for the unusual economic and social role of the Dissenters in the Industrial Revolution era, stressing in particular the importance of their international mercantile connections with co-religionists abroad (especially in the American colonies), indeed the vital importance of both their family and religious ties for providing the necessary trust involved in ‘the transmission of credit and trading reports’. Certainly, in so far as they were dealing with co-religionists in business, at home and abroad, most economists would quickly recognize the importance of principal-agent relationships that were based on both knowledge and trust in those with common religious, social, and business activities, and a common need to unite for protection against many hostile forces.<sup>27</sup> Chapman also contends that ‘economic ideology’ played a major role as well in the striking mercantile success of the Quakers and Unitarians in the eighteenth and nineteenth centuries.<sup>28</sup>

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<sup>25</sup> Cardinal Richelieu, responding to the Catholic clergy’s bitter hatred of the Edict of Nantes, had in fact annulled the political clauses in 1629; but the far greater damage was done by Louis XIV in 1685. See also the comments of Ralph Davis, *Rise of the Atlantic Economies*: p. 310, in referring again to the English Dissenters: ‘Their peculiar social position had no French counterpart, and France was economically the worse for this;’ and, on p. 313, ‘Although the need for innovation was as strong in France as in England, French society offered a less congenial climate to innovation than did English society.’

<sup>26</sup> See François Crouzet, ‘The Huguenots and the English Financial Revolution’, in Patrice Higonnet, David Landes, and Henry Rosovsky, eds., *Favorites of Fortune: Technology, Growth, and Economic Development Since the Industrial Revolution* (Cambridge, Mass., Harvard University Press, 1991), pp. 221-66.

<sup>27</sup> Similar arguments have been advanced for both French Huguenots and Jews, both engaged in ‘diasporas’, in the 18<sup>th</sup> and 19<sup>th</sup> centuries.

<sup>28</sup> Stanley Chapman, *Merchant Enterprise in Britain from the Industrial Revolution to World War I* (Cambridge and New York: Cambridge University Press, 1992), pp. 43-47.

There are of course many other possible or hypothetical relationships between Protestantism and the development of modern forms of capitalism, and of capitalist entrepreneurship in particular, that have concerned a wide variety of historians and sociologists, but which cannot be considered in this study.<sup>29</sup> That includes a deeper sociological analysis of the ‘Protestant work ethic’, which pertains as much to artisans, tradesmen, and professionals, as to entrepreneurs. One possible relationship, and a major difference between Protestantism and Catholicism, that has not been so well studied is the question of confession and guilt. Well-known, of course, is the power and prevalence of the Catholic confessional, in which the penitent, in confessing his or her sins by the sacrament of penance, to a hidden priest, receives ‘absolution’ or ‘formal remission of sin’: i.e., forgiveness and thus the (temporary) removal of guilt. Protestants had no such confessionals, and no such ‘absolution’ and thus no such removal of the stain of guilt. To what extent were Protestants, and not just Calvinists and other Dissenters, motivated to achieve success in order to absolve themselves of guilt – not so much guilt for actual sins committed but guilt for not living up to their ingrained ideals, including those of the Protestant ‘work ethic’?<sup>30</sup>

Finally, any analysis of the relationship between Protestantism and Capitalism, and the role of the Dissenters, in the century from the end of the Civil War and Cromwell era to the beginnings of the Industrial Revolution, must also be seen in the context of major constitutional and institutional changes: those that were the product of the aforementioned Glorious Revolution, i.e., the overthrow of Kings James II, and his

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<sup>29</sup> See in particular: Christen T. Jonassen, ‘The Protestant Ethic and the Spirit of Capitalism in Norway’, *American Sociological Review*, 12 (1947), 676-86; David C. McClelland, *The Achieving Society: With A New Introduction* (New York, Halstead Press, 1975; original edn: 1961); David C. McClelland, *The Achievement Motive* (New York: Appleton-Century-Crofts, 1953); David C. McClelland, and David G. Winter, Sara K. Winter, et. al, *Motivating Economic Achievement* (New York, Free Press: 1969). For an important overview, most favourable to the Weber-Tawney thesis, see David Landes, *The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present*, 2<sup>nd</sup> edn. (Cambridge and New York: Cambridge University Press, 2003), pp. 27-31.

<sup>30</sup> See E. P. Thompson, ‘Time, Work-Discipline, and Industrial Capitalism’, *Past & Present*, no. 38 (1967), 56-97. For a corresponding French view on this confessional difference between Catholics and Protestants, see Albert Camus, *Correspondance, 1932-1960* (Paris, Gallimard, 1981); and Joseph McBride, *Albert Camus : Philosopher and Littérateur* (London: St. Martin's Press, 1992).



replacement by Mary II and her Dutch *stadhouder* husband William III of Orange. Now well known is the famous 1989 article of Douglass North and Barry Weingast on the consequences of the Glorious Revolution, in terms of not just the quasi-religious freedom offered by the Toleration Act of 1689, but more so in the final establishment of the supremacy of Parliament – of the House of Commons over finances, in particular– the fuller establishment of judicial independence and the ‘rule of law’ and property rights, as much in the market economy – in greatly reducing transaction costs (as defined by North) – as in the political sphere and civil conduct (the 1689 Bill of Rights, equally decisive in establishing the ‘rule of law’ over ‘royal supremacy’).<sup>31</sup>

Perhaps of equal importance, especially for this study on entrepreneurship, is what the British still call their ‘Financial Revolution’, whose chief institutional features were clearly imported from William’s Dutch Republic (United Provinces):<sup>32</sup> the establishment of a permanent national debt – the responsibility of Parliament, not of the crown – based on the government’s sale of fully negotiable perpetual annuities (Dutch *renten*), traded on the London and Amsterdam Stock Exchanges, and financed by the levy of excise (consumption) taxes authorized by Parliament.<sup>33</sup>

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<sup>31</sup> Douglass North and Barry Weingast, ‘Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century Britain’, *Journal of Economic History*, 49: 4 (Dec. 1989), 803–32. See also Douglass North, ‘Government and the Cost of Exchange in History’, *Journal of Economic History*, 44 (1984), 255–64; North, ‘Transaction Costs in History’, *Journal of European Economic History*, 14 (1985), 557–76. See the following n. 34 below.

<sup>32</sup> See James D. Tracy, *A Financial Revolution in the Habsburg Netherlands: Renten and Renteniers in the County of Holland, 1515 - 1565* (Berkeley-London: Berkeley University Press, 1985); Marjolein ‘t Hart, Joost Jonker, and Jan Luiten van Zanden, eds., *A Financial History of the Netherlands* (Cambridge and New York: Cambridge University Press, 1997); Marjolein ‘t Hart, ‘“The Devil or the Dutch”: Holland’s Impact on the Financial Revolution in England, 1643-1694’, *Parliaments, Estates and Representatives*, 11:1 (June 1991), 39-52; Wantje Fritschy, ‘A “Financial Revolution” Revisited: Public Finance in Holland During the Dutch Revolt, 1568 - 1648’, *The Economic History Review*, 2<sup>nd</sup> ser., 56:1 (February 2003), 57-89.

<sup>33</sup> See in particular: Peter G. M. Dickson, *The Financial Revolution in England : a Study in the Development of Public Credit, 1688-1756* (London, 1967); and also Henry Roseveare, *The Financial Revolution, 1660 - 1760* (London: Longman, 1991); and Patrick O’Brien, ‘Fiscal Exceptionalism: Great Britain and its European Rivals—From Civil War to Triumph at Trafalgar and Waterloo’, in Patrick O’Brien and Donald Winch, eds., *The Political Economy of British Historical Experience, 1688–1914* (Oxford and New York: Oxford University Press, 2002), pp. 245–65; Patrick O’Brien and P. Hunt, ‘The Rise of a Fiscal State in England, 1485-1815’, *Historical Research*, 66 (1993), 129-76; Patrick O’Brien, ‘The Political Economy of British Taxation’, *Economic History Review*, 2<sup>nd</sup> ser., 41:1 (Feb. 1988), 1-32; John Brewer, *The*

Any such seemingly radical reinterpretation of economic history, on critical ‘turning points’, has naturally and recently provoked a considerable reaction in the periodical literature.<sup>34</sup> Though I do not believe that the critics have succeeded in negating the North-Weingast thesis, the nature of this study on British entrepreneurship, along with lack of space, precludes any further analysis of this debate, except to note one relevant point: the relationship between a major religious issue, for Protestants as well as Catholics – the usury doctrine, and the origins and nature of the modern Financial Revolution. As I have contended elsewhere, those origins lie in the vigorous and indeed vicious resuscitation of the anti-usury campaign in the early thirteenth century, following Lateran (Church Council) IV, in 1215, and the contemporary establishment of the two mendicant preaching orders – the Franciscans and Dominicans – preaching hellfire and damnation for those guilty of the mortal sin of usury: both for those who exacted and those who paid any interest whatsoever on a loan. There is considerable evidence that, from the 1220s, in many towns in northern France and Flanders, more and more merchants and financiers, fearing such damnation, preferred to accept much lower returns on annuities (*rentes, renten*) purchased from urban governments than the far higher interest rates that they would have earned on loans or debentures. As the papacy soon determined, as early as 1251 (Innocent IV), the *rente* or annuity was not a loan, and hence not subject to the usury doctrine, because the purchaser had surrendered his financial capital in perpetuity to the seller, and thus he had no right to redeem or reclaim his money (while the seller could later choose to redeem the annuity at par). By the sixteenth century, the sale of annuities (*rentes*) was displacing loans as the predominant form of public borrowing in

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*Sinews of Powers: War, Money, and the English State, 1688-1783* (Cambridge, Mass: Harvard University Press, 1990).

<sup>34</sup> See Nathan Sussman and Yishay Yafeh, ‘Institutional Reforms, Financial Development and Sovereign Debt: Britain, 1690 - 1790’, *Journal of Economic History*, 66:4 (Dec. 2006), 882-905; David Stasavage, ‘Partisan Politics and Public Debt: The Importance of the “Whig Supremacy” for Britain’s Financial Revolution’, *European Review of Economic History*, 11:1 (April 2007), 123-53; David Stasavage, *Public Debt and the Birth of the Democratic State: France and Great Britain, 1688 - 1789* (Cambridge and New York: Cambridge University Press, 2003).

western Europe: thus, providing the precedents for the English ‘Financial Revolution’.<sup>35</sup>

The relevance for seventeenth-century England is simply the fact that most Protestants continued to be as hostile to usury as most Roman Catholics had been and probably more so. We have been led to believe, however, that after Elizabeth I’s Parliament of 1571 had amended the usury laws to permit interest up to 10 percent -- so that henceforth usury came to mean any interest charges above that limit – public hostility to ‘normal’ interest had waned. But such a view is far from the historic truth. Even Elizabeth’s statute used hostile language in stating (in an almost contradictory fashion) in its preamble: that ‘forasmuch as all Usurie being forbydden by the lawe of God’.<sup>36</sup> In fact, Elizabeth had merely restored her father’s statute of 1545 (Henry VIII), which had then been repealed under the even more Protestant regime of Edward VI, in 1552, ‘forasmuche as Usurie is by the worde of God utterly prohibited, as a vyce moste odyous and detestable’.<sup>37</sup> Furthermore, Calvin and Luther, the two major initiators and leaders of the Protestant Reformation, did not really have the more ‘liberal’ views commonly attributed to them on the usury issue. Only grudgingly did these religious leaders accept interest payments, but only on investment loans, and only to a maximum of five percent.<sup>38</sup> Calvin himself clearly voiced his disapproval in stating that ‘it is a very rare thing for a man

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<sup>35</sup> John Munro, ‘The Medieval Origins of the Financial Revolution: Usury, *Rentes*, and Negotiability’, *The International History Review*, 25:3 (September 2003), 505-62; James Tracy, ‘Taxation and State Debt’, in Thomas Brady, Heiko Oberman, and James Tracy, eds., *Handbook of European History, 1500 - 1600: Late Middle Ages, Renaissance and Reformation*, 2 vols. (Leiden, E.J. Brill, 1994-95), vol. I: *Structures and Assertions*, pp. 563-88; James Tracy, ‘On the Dual Origins of Long-Term Urban Debt in Medieval Europe’, in Karel Davids, Marc Boone, and V. Janssens, eds., *Urban Public Debts: Urban Government and the Market for Annuities in Western Europe, 14th-18th Centuries*, Studies in European Urban History (1100-1800) vol. 3 (Turnout: Brepols, 2003), pp. 13-26; Tracy, *Renten and Renteniers* (see n. 32 above).

<sup>36</sup> 13 Elizabeth I, c. 8 (1571): in Great Britain, Record Commission (T. E. Tomlins, J. Raithby, et al.), eds., *Statutes of the Realm*, 6 vols. (London, 1810-22), vol. IV:1, p. 542.

<sup>37</sup> Statute 37 Henrici VIII, c. 9 (1545) and Statute 5-6 Edwardi VI c. 20, in *Statutes of the Realm*, vol. III, p. 996; vol. IV:1, p. 155.

<sup>38</sup> See Bainton (1952), *Reformation*, pp. 247-50, noting few differences between Luther and Calvin on this issue.

to be honest and at the same time a usurer'.<sup>39</sup> He had also contended that all habitual usurers should be expelled from the Church;<sup>40</sup> and indeed in Holland, the Calvinist synod of 1581 had decreed that no banker should ever be admitted to communion service.<sup>41</sup> Subsequently, in the seventeenth century, an English Puritan minister observed that 'Calvin deals with usurie as the apothecarie doth with poyson';<sup>42</sup> and early in that century the renowned Sir Francis Bacon (1561-1626) had contended that 'Usury is the certainest Meanes of Gaine, though one of the worst'.<sup>43</sup> According to Richard Tawney, the English Puritan clergy continued to preach against the 'soul-corrupting taint of usury' to the very eve of the English Civil War (1642-51).<sup>44</sup>

It is thus important, in the early-modern history of usury laws and the origins of England's own 'financial revolution', to note that, although Elizabeth I had set the maximum interest rate at 10 percent (1571), subsequent Parliaments lowered that legal maximum rate, evidently in accordance with the long-term decline in real interest rates: to 8 per cent in 1623, to 6 per cent in 1660, and finally to 5 per cent in 1713,

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<sup>39</sup> Harkness (1958), *John Calvin*, pp. 201-10.

<sup>40</sup> John T. Noonan, *The Scholastic Analysis of Usury* (Cambridge, Mass., Harvard University Press, 1957), pp. 365-67.

<sup>41</sup> Geoffrey Parker, 'The Emergence of Modern Finance in Europe, 1500-1750', in Carlo Cipolla, ed., *The Fontana Economic History of Europe*, Vol. II: *Sixteenth and Seventeenth Centuries* (New York, 1974), p. 538.

<sup>42</sup> Cited in Tawney (1926), *Religion and the Rise of Capitalism*, p. 94; see also pp. 61-115.

<sup>43</sup> Daniel Coquillette, 'The Mystery of the New Fashioned Goldsmiths: From Usury to the Bank of England (1622-1694)', in Vito Piergiovanni, ed., *The Growth of the Bank as Institution and the Development of Money-Business Law*, Comparative Studies in Continental and Anglo-American Legal History vol. 12 (Berlin, 1993), pp. 94-99, citing also a similar statement from John Blaxton, *The English Usurer* (London, 1634).

<sup>44</sup> Thomas Wilson, *A Discourse Upon Usury By Way of Dialogue and Orations* [1572], with an historical introduction by Richard H. Tawney (New York, 1925), pp. 106-34, esp. p. 117; Tawney (1926), *Religion and the Rise of Capitalism*, pp. 91-115, 132-39, 178-89.

the rate that continued to prevail until Parliament finally abolished the usury laws in 1854.<sup>45</sup> Hence another point of significance about England's own 'financial revolution', in establishing its own permanent funded national debt: that, to repeat, was entirely based on the sale of annuities, and not of loan instruments (bonds and debentures) and was thus also fully exempt from these usury laws, with such a low legal maximum.<sup>46</sup> One indication of the success of the Financial Revolution – though not the only one – was the fall in the interest rate on government borrowing from the 14-percent return on the Million Pound Loan of 1693 (in fact a lifetime annuity, marking the inception of the Financial Revolution) to the 3-percent return on Consols in 1757, with the completion of Pelham's Conversion.<sup>47</sup> That reduced considerably the extent to which government borrowing, principally to finance warfare, 'crowded out' capital investments for private enterprise,<sup>48</sup> and the fully negotiable Consols themselves provided British entrepreneurs with an exceptionally

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<sup>45</sup> R. D. Richards, *The Early History of Banking in England* (London, 1929; reissued 1958), pp. 19-20; and statute 17-18 Victoria c. 90 (1854).

<sup>46</sup> See nn. 2, 4, above, and Dickson (1967), *The Financial Revolution in England*, table 7, p. 80. Note that in 1711 and 1712, the English Exchequer had sold redeemable debentures with an interest rate of 6.0%. But thereafter all annuities were issued at 5% or less..

<sup>47</sup> See n. 46. Sir Henry Pelham, both Chancellor of the Exchequer and Prime Minister (1743-d. 1754), undertook the conversion of the national debt from 1749 to 1752: first, into 3.5% Consols (Consolidated Stock of the Nation: perpetual redeemable and negotiable annuities); and then from 1757 (by his successor), into 3.0% Consols, which endured unchanged until 1888, when George Goschen, Chancellor of the Exchequer, converted them into 2.75% annuities, with the provision that they be converted into 2.5% annuities in 1903, the rate that prevails to this day for Consols sold on the London Stock Exchange. On 25 June 2007, the market price of 2.5% Consols on the London Stock Exchange was £50.40, to provide a yield of 4.96% (i.e., 2.5/50.40). See Dickson (1967), *Financial Revolution*, pp. 486-520; C. Knick Harley, 'Goschen's Conversion of the National Debt and the Yield on Consols', *Economic History Review*, 2nd ser., 29:1 (Feb 1976), 101-06.

<sup>48</sup> For several different perspectives, but more for the subsequent era, see Jeffrey Williamson, 'Why Was British Growth So Slow during the Industrial Revolution', *Journal of Economic History*, 44:3 (Sept. 1984), 687-712; N.F.R. Crafts and C.K Harley, 'Output Growth and the British Industrial Revolution: a Restatement of the Crafts-Harley View', *Economic History Review*, 2<sup>nd</sup> ser., 45:4 (Nov. 1992), 703-30; Carol E. Heim and Philip Mirowski, 'Interest Rates and Crowding-Out during Britains' Industrial Revolution', *Journal of Economic History*, 47:1 (March 1987), 117-39; Joel Mokyr, 'Has the Industrial Revolution Been Crowded Out? Some Reflections on Crafts and Williamson', *Explorations in Economic History*, 24:3 (July 1987), 293-319; Robert Black and Claire Gilmore, 'Crowding Out during Britain's Industrial Revolution', *Journal of Economic History*, 50:1 (March 1990), 109-31; Carol Heim and Philip Mirowski, 'Crowding Out: A Response to Black and Gilmore', *Journal of Economic History*, 51:3 (Sept. 1991), 701-06; Gregory Clark,

valuable form of collateral in borrowing capital, both working and fixed capitals. Few entrepreneurs can survive without borrowing at some time in the development of their business enterprises.

### **Tawney's thesis on 'agrarian capitalism' and the 'rise of the gentry' debate**

Tawney had first achieved his academic fame, not with *Religion and the Rise of Capitalism*, but much earlier, in 1912, with his renowned study on enclosure movements and the evolution of 'agrarian capitalism' in Tudor-Stuart England: *The Agrarian Problem in the Sixteenth Century*.<sup>49</sup> Subsequently, almost three decades later, in 1940, he achieved even greater fame, but then trenchant opposition, opprobrium, and misfortune, with his famous article on 'The Rise of the Gentry', in which he sought to explore both the social and economic origins of the English Civil War.<sup>50</sup> In his view, the English gentry were or largely became agrarian 'capitalists', who were imbued with an entrepreneurial spirit and profit-maximizing motivations, far more so than typical members of the traditional, military-oriented, aristocracy – or, more properly speaking, the peerage: i.e., dukes, archbishops, marquesses, earls (= European counts), viscounts, and barons.

The term 'gentry' has to be understood as a unique English social institution, in its relation to the genuine aristocracy.<sup>51</sup> For the English aristocracy differed in many important respects from the continental

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'Debts, Deficits, and Crowding Out: England, 1727 - 1840', *European Review of Economic History*, 5:3 (December 2001), 403-36.

<sup>49</sup> Richard H. Tawney, *The Agrarian Problem in the Sixteenth Century* (London, 1912). Re-issued with an introduction by Lawrence Stone (London, 1967).

<sup>50</sup> Richard H. Tawney, 'The Rise of the Gentry, 1558-1640', *Economic History Review*, 1st ser. 11 (1941), 1-38. Reprinted with a postscript (1954) in E.M. Carus-Wilson, ed., *Essays in Economic History*, 3 vols. (London, 1954), Vol. I, pp. 173-214.

<sup>51</sup> On the English gentry, and its relationships with the peerage or titled aristocracy, the most important study is: George E. Mingay, *The Gentry: The Rise and Fall of a Ruling Class* (London, 1976). See also, for the literature of the debate on the Tawney thesis: Lawrence Stone, 'The Anatomy of the Elizabethan Aristocracy', *Economic History Review*, 1st ser., 18: 1&2 (1948), 1-53; Hugh R. Trevor-Roper, 'The Elizabethan Aristocracy: An Anatomy Anatomized', *Economic History Review*, 2nd ser. 3 (1951), 279-98: a vigorous (indeed heartless) attack on Stone; Lawrence Stone, 'The Elizabethan Aristocracy: A Restatement', *Economic History Review*, 2nd ser., 4: 3 (1952), 302-21; Hugh R. Trevor-Roper (Lord Dacre), *The Gentry, 1540-1640: Economic History Review Supplement no. 1* (Cambridge University Press, 1953); Lawrence Stone, *The Crisis of the Aristocracy, 1558-1641* (Oxford, 1956); Eric Kerridge, *Agrarian Problems in the Sixteenth Century and After* (London, 1969): more concerned with the question of enclosure

forms. In the first place, only the eldest son, by the law of primogeniture, inherited the noble or aristocratic title, along with the attached estates, and thus the right to sit as a peer in the House of Lords. All other offspring were under law commoners (even if having a life-time courtesy title of ‘Lord’), while on the continent they would be considered members of the aristocracy. Therefore, many members of the English gentry were the younger sons and relatives of these peers; and consequently – as Tawney was really loathe to admit – they were generally indistinguishable economically, socially, and politically from the peers – and certainly they were not a separate social class. Furthermore, while all knights (cavalry horse soldiers) were considered to be aristocrats on the continent (*noblesse d’épée*), they were all legally commoners in England; and they were also the major component of the House of Commons in medieval and early modern England. The English gentry also consisted of those second-generation ‘gentlemen farmers’ whose fathers – often of bourgeois or even yeomen origins – had purchased manorial estates and who then bred their children to emulate the lifestyles of a lesser landed nobility, though without (in Tawney’s view) losing their bourgeois acquisitive and entrepreneurial instincts.<sup>52</sup>

Tawney’s thesis begins with a direct link to the question of Protestantism: namely, Henry VIII’s

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than with the gentry debate per se; Alan Simpson, *The Wealth of the Gentry, 1540-1660* (Chicago, 1961); Julian Cornwall, ‘The Early Tudor Gentry’, *Economic History Review*, 2nd ser. 17 (1965), 456 - 71; Julian Cornwall, *Wealth and Society in Early Sixteenth-Century England* (London, 1988); Gordon Batho, ‘Noblemen, Gentlemen, and Yeomen’, as chapter V, Part B, in Joan Thirsk, ed., *The Agrarian History of England and Wales*, Vol. IV: 1500-1640 (Cambridge, 1967), pp. 276- 306; T. H. Aston and C.H.E. Philipin, eds., *The Brenner Debate: Agrarian Class Structure and Economic Development in Pre-Industrial Europe* (Cambridge, 1987), including: Robert Brenner, ‘The Agrarian Roots of European Capitalism’, *Past & Present*, no. 97 (Nov. 1982), 16-113; and J. P. Cooper, ‘In Search of Agrarian Capitalism’, *Past and Present*, no. 80 (August 1978), 20-65; J.P. Cooper, ‘The Counting of Manors’, *Economic History Review*, 2nd ser. 8 (1956), 377 - 86; Peter R. Coss, ‘The Formation of the English Gentry’, *Past & Present*, no. 147 (May 1995), pp. 38-64; Peter R. Coss, *The Origins of the English Gentry* (Cambridge and New York: Cambridge University Press, 2003).

<sup>52</sup> For a contemporary definition of the gentry, see Sir Thomas Smith, *De Republica Anglorum: A Discourse on the Commonwealth of England* (London, 1583), ed. L. Alston, with a preface by F.W. Maitland (Cambridge: Cambridge University Press, 1906), chapter 20, pp. 39-40: ‘whosoever studieth the lawes of the realme, who studieth in the universities, who professeth liberal sciences, and to be shorte, who can live idly and without manuall labour, and will beare the port, charge and countenance of a gentleman, ... he shall be taken for a gentleman’.

break with Rome (over the issue of divorcing Catherine of Aragon), to establish an independent Church of England, in 1533, a break that was solidified with the ‘dissolution of the monasteries’ in 1536. Although most of the monastic lands, accounting for perhaps 20 percent of the developed arable lands of England, were either given as rewards or sold to Henry’s aristocratic supporters – to ensure that they would support him against Rome – within the century from 1536 to the outbreak of Civil War in 1642, about 90 percent of those monastic lands (according to most estimates) had passed into the hands of the gentry.<sup>53</sup>

In Tawney’s view, the economic mechanisms that lay behind this vast transfer of land to the gentry was the Price Revolution: in particular the variety of responses to this long sustained inflation, commencing just before 1520 and lasting until the mid-1650s.<sup>54</sup> Tawney contended that the traditional feudal aristocracy suffered from three related problems. First, their estates were generally in the form of hundreds or more manors scattered across not just England, but across the British Isles; and that scattering made estate management very difficult to undertake, all the more so since much of the estate income was in the form of fixed feudal dues and relatively fixed (nominal) rents for both freehold and copyhold peasant tenures. Consequently, their estate incomes did not rise with inflation. The second problem was that many of the aristocracy were still imbued with a feudal mentality that scorned any thought of commercial estate ‘improvements’ and profit-maximization – certainly not any form of ‘agrarian capitalism’, as Tawney envisaged it – and also any thought of seriously disrupting the lives of their tenants, many so loyal to their lords over many generations. The third problem was their political, military, and social statuses, which were becoming increasingly expensive to maintain, especially when many such costs – chiefly military and court services – were rising faster than Consumer Price Index, or overall price level.<sup>55</sup> Whether all or most of these

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<sup>53</sup> H. J. Habakkuk, ‘The Market for Monastic Property, 1539-1603’, *Economic History Review*, 2nd ser., 10:3 (1958), 362-80.

<sup>54</sup> For the literature on the Price Revolution, and my own views on inflation, see n. 8 above. Tawney did not, in fact, have a good understanding of the Price Revolution, or of inflation in general.

<sup>55</sup> See E. H. Phelps Brown and Sheila V. Hopkins, ‘Seven Centuries of the Prices of Consumables, Compared with Builders’ Wage Rates’, *Economica*, 23:92 (November 1956), 296-314: reprinted in E.H.



factors were really true of the Elizabethan aristocracy, clearly many did opt for the line of least resistance in coping with inflation: namely, to live off their capital by selling lands, especially recently acquired lands that were not governed by aristocratic estate entails; and that meant chiefly those monastic lands, though many were also finally forced to sell patrimonial estate lands as well. The Tudor and early Stuart monarchs were similarly forced to sell off crown lands, for the very same reasons.<sup>56</sup>

Many of the gentry, on the other hand – again, in Tawney’s view – did not face such enormous demands on their time and energies. Furthermore, in having far smaller estates, often with only a few manors, they had a commensurately greater ability to engage in rational estate management, and indeed to engage in the enclosure that became so prominent in Tudor-Stuart and Hanoverian England, so that by the early eighteenth century about 70 percent of the cultivated arable land of England had been enclosed.<sup>57</sup> Such

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Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 13-39 (with price indexes for sub-groups not in the original publication). Their ‘basket of consumables’ price-index, as calculated in quinquennial means, with a base of 1451-75=100, rises from 108.60 in 1511-15 to a peak of 733.20 in 1646-60. My recalculation (unpublished) of their price-index, from their own ‘working papers’ in the Archives of the British Library of Political and Economic Science, and using a different methodology (based on actual prices) rises from a quinquennial mean of 106.04 in 1511-15 to one of 646.40 in 1646-50 (peaking in the same quinquennium).

<sup>56</sup> For both the evidence and analysis, see nn. 45-47 above.

<sup>57</sup> For Tudor-Stuart era enclosures the literature is again vast. See in particular: Joan Thirsk, ed., *The Agrarian History of England and Wales*, Vol. IV: 1500-1640 (Cambridge, 1967), esp. Joan Thirsk, ‘Engrossing and Enclosing’, pp. 200-56; and Joan Thirsk, ed., *The Agrarian History of England and Wales*, Vol. V: 1640-1750, Part i: *Regional Farming Systems* (Cambridge, 1984) ; and Part ii: *Agrarian Change* (Cambridge, 1985); Mark Overton, *Agricultural Revolution in England: The Transformation of the Agrarian Economy, 1500 - 1800*, Cambridge Studies in Historical Geography (Cambridge and New York: Cambridge University Press, 1996); Donald N. McCloskey, ‘The Economics of Enclosure: A Market Analysis’, and also his ‘The Persistence of English Common Fields’, both in W.N. Parker and E.L. Jones, ed., *European Peasants and Their Markets: Essays in Agrarian Economic History* (Princeton, 1975), pp. 123-60 and 92-120, respectively; J.A. Yelling, *Common Field and Enclosure in England, 1450-1850* (London, 1977); Ann Kussmaul, *A General View of the Rural Economy of England, 1538 - 1840*, Cambridge Studies in Population, Economy, and Society in Past Time no. 11 (Cambridge University Press, 1990); Robert C. Allen, *Enclosure and the Yeoman: The Agricultural Development of the South Midlands, 1450 - 1850* (Oxford: Clarendon Press, 1992); George Mingay, *Enclosure and the Small Farmer in the Age of the Industrial Revolution*, Studies in Economic History series (London, 1968); J. G. Brewer, *Enclosures and Open Fields: A Bibliography* (London, 1972); S.R. Wordie, ‘The Chronology of English Enclosure, 1500-1914’, *Economic History Review*, 2nd ser. 36 (1983), pp. 483-505.

enclosures eliminated communal peasant tenancy rights and permitted the ‘engrossing’ or amalgamations of the scattered plough strips constituting the former peasant tenancies into compact farms under single unified management, whether undertaken by the landlord himself or by his tenants who leased lands at market rentals. That allowed both gentry landlords and their major tenants, now freed from peasant property rights and their communal constraints, to engage in the ‘New Husbandry’, most of which was imported from the Low Countries. And thus much of the gentry, whether they managed their own estates, as capital farms, or let their enclosed lands to tenant farmers, on relatively short-term leases, were able to capture much more of the economic rent (Ricardian rent) that accrued with the steady rise in the real values of most agricultural commodities – economic rents that would otherwise have been captured by freehold and copyhold tenants.

What is the current evidence for the extent of such land transfer? According to statistics from various sources, presented in the accompanying table, the gentry’s share of English arable lands rose from about 25 percent in 1436 — thus indicating that the gentry had already ‘risen’ long before 1536 – to 45 percent in 1690, and to 50 percent by 1790.

#### **ENGLISH LANDHOLDING IN 1436, 1690, and 1790**

##### **Percentage of Lands Held by English Social Groupings**

	<b>1436</b>	<b>1690</b>	<b>1790</b>
<b>Church and Crown:</b>	35%	10%	10%
<b>Peerage (Aristocracy):</b>	20%	18%	25%
<b>Gentry:</b>	25%	45%	50%
<b>Yeomen Freeholders:</b>	20%	27%	15%

**Sources:** George E. Mingay, *The Gentry: The Rise and Fall of a Ruling Class* (London, 1976), Table 3.1, p. 59, based on J. P. Cooper, ‘The Social Distribution of Land and Men in England, 1436 - 1700’, *Economic History Review*, 2<sup>nd</sup> ser., 20:3 (December 1967), 419-40; F .M. L. Thompson, ‘The Social Distribution of Landed Property in England Since the Sixteenth Century’, *Economic History Review*, 2<sup>nd</sup> ser., 19:3 (December 1966), 505-17. Table 3.1 (figures adjusted, to add up to 100%).

Those gentry gains, up to 1690, appear to have come chiefly from the Church and the Crown, whose share fell from 35 percent in 1436 to just 10 percent in 1690, while the shares for the peerage (aristocracy) fell only from 20 percent in 1436 to 18 percent in 1690. But these figures are highly misleading, in not revealing that a considerable proportion of the ‘aristocratic’ land holdings in 1690 consisted of estates held by many former gentry who had acquired peerages during the post-1660 Restoration era (when the ranks of aristocrats had been seriously depleted, for various reasons). As this table indicates, and as H. J. Habakkuk contended, they undoubtedly provided a major reason why this ‘rejuvenated’ aristocracy, so vastly different from that of the Elizabethan era was able to regain its share of land holdings to about 25 percent, a century later, in 1790. Note, from this table, that the gains in both aristocratic and gentry land holdings, from 1690 to 1790, came chiefly at the expense of yeomen freeholders. We should not assume that these ‘new’ peers had shed their former gentry customs, culture, and socio-economic and especially entrepreneurial outlooks. Indeed, many of them – such as Norfolk’s 2<sup>nd</sup> Viscount Charles Townsend of Rainham (1674-1738), known as ‘Turnip Townsend’ — were major proponents and practitioners of the ‘New Husbandry’.<sup>58</sup> Of course, one can find many variations, with some gentry who failed as capitalist farmers, or those who simply failed to engage in rational estate management, and contrary examples of some aristocratic landowners who did cope with inflation and prospered – though most such examples are found amongst the ‘rejuvenated’ aristocracy of gentry origins, in the post Restoration era.

In very general terms, the Tawney thesis deserves more support and credit than most historians seem willing to grant it: namely, the economic and social significance of the transfer of a vast amount of productive lands into the hands of those more likely, more able, more willing, and certainly more predisposed to engage in rational estate management, and other commercial enterprises, indeed to engage in

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<sup>58</sup> See in particular: H.J. Habakkuk, ‘English Land Ownership, 1680-1740’, *Economic History Review*, 1st ser., 10 (1940), 2-17. Townsend was the son of Sir Horatio Townsend, made Baron Townsend in 1661 and Viscount Townsend in 1682; Charles succeeded to the peerage in 1687. See also the sources cited in n. 57 above and n. 62 below.

entrepreneurial profit-maximisation.<sup>59</sup> And, as Tawney and many others have pointed, a high proportion of these gentry, especially in the seventeenth century, were Puritans (the most renowned example being Oliver Cromwell himself).<sup>60</sup>

The extent to which at least a significant number of the English gentry and/or their major leasehold tenants did become or act as genuine ‘agrarian capitalists’, re-orienting agricultural production in mixed husbandry (i.e., combining grain growing and the production of other arable crops with livestock raising, both sheep and cattle) towards the market, with the aim of maximizing profits, has yet to be fully explored. But consider, for example, the ingenuity and entrepreneurship of the Herefordshire ‘gentleman farmer’ Roland Vaughan, who, in 1589, invented and then popularized the ‘floating meadow’ (or water-meadow). It involved the use of sluice-gates, dykes, and water-canals to divert water from streams or rivers to flood the meadows or parts of the arable in November, and then to drain them in March. That provided a thermal blanket, under the ice, to protect the underlying soil from freezing and to promote far earlier and more intense germination, as much as an eight-fold increase in hay production.<sup>61</sup>

Certainly the very character of English agriculture does change dramatically from this period, especially with the far more widespread diffusion of ‘alternate’ or ‘convertible husbandry’, which led to major increases in agricultural productivity, becoming indeed the very heart of the so-called ‘Agricultural Revolution’, and providing the most efficient and productive form of agriculture before the

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<sup>59</sup> See the literature on this debate in n. 51 above. The most trenchant (and often unfair) critics of the Tawney thesis were Eric Kerridge (1969), Hugh Trevor-Roper (1953), and J.P. Cooper (1956, 1978).

<sup>60</sup> See: Cliffe (1984), *The Puritan Gentry*; Cliffe, *Puritans in Conflict* (1988).

<sup>61</sup> Joseph Bettey, ‘The Development of Water Meadows on the Salisbury Avon, 1665-1690’, *Agricultural History Review*, 51:ii (2003), 163-72; Mary Delorme, ‘A Watery Paradise: Roland Vaughan and Hereford's “Golden Vale”’, *History Today*, 39 (1989), 38-43; G. G. Bowie, ‘Watermeadows in Wessex: A Re-evaluation for the Period 1640 - 1850’, *Agricultural History Review*, 35 (1987), 151-58; Susanna Wade Martins and Tom Williamson, ‘Floated Water-Meadows in Norfolk: A Misplaced Innovation’, *Agricultural History Review*, 42:I (1994), 20 - 37; Eric Kerridge, *The Farmers of Old England* (London, 1973), chapter 4, ‘The Great Inventions’, pp. 103-29; Eric Kerridge, *The Agricultural Revolution* (London, 1967); Overton (1996), *Agricultural Revolution*, esp. chapter 3, ‘Agricultural Output and Productivity, 1500 - 1800’, pp. 63-132.

advent of modern chemical fertilizers. It meant, in essence, the alternation in the use of agricultural land between arable and pasture (as opposed to the previous regime of permanent arable and permanent pastures) over a five or more year cycle, the cultivation of a far wider variety of crops, including far more powerful nitrogen-fixing legumes (clover, alfalfa-lucerne, sainfoin), other fodder crops, and industrial crops, thereby eliminating the need for fallowing parts of the arable. It also provided far more efficient pastures and thus a far more productive form of livestock raising, not only in vastly improving livestock feeding (with more fodder crops from the arable) and the size of cattle and sheep herds, but in permitting selective breeding of livestock.<sup>62</sup>

The period of the greatest, most widespread diffusion of convertible husbandry, especially with the cultivation of the new legumes, came during the period of an agrarian recession, from the 1660s to the 1740s, when the behaviour of relative prices promoted a shift from grain growing to fodder and industrial crops; and especially a more marked shift to livestock products. At the same, the more general fall in agricultural prices, while wages and other farm costs were rising, thus creating a 'price-cost' squeeze, also

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<sup>62</sup> See the sources cited in nn. 57, 61; and also the following: Joan Thirsk, 'Farming Techniques', in Thirsk (1967), *Agrarian History of England*, vol IV, pp. 161-99; Joan Thirsk, 'Agricultural Innovations and their Diffusion', in Thirsk (1985), *Agrarian History of England*, vol. V, pp. 533 - 89; E.L. Jones, ed., *Agriculture and Economic Growth in England, 1650-1815* (London, 1967); George E. Mingay, ed., *The Agricultural Revolution: Changes in Agriculture, 1650 - 1880* (London, 1977); John Broad, 'Alternate Husbandry and Permanent Pasture in the Midlands, 1650 - 1800', *Agricultural History Review*, 28 (1980), 77 - 89; Mark Overton, 'Agricultural Revolution? Development of the Agrarian Economy in Early-Modern England', in A. R. H. Baker and D. J. Gregory, eds., *Explorations in Historical Geography: Interpretative Essays* (Cambridge, 1984), pp. 118-39; R. B. Outhwaite, 'Progress and Backwardness in English Agriculture, 1500-1650', *Economic History Review*, 2nd ser. 39 (Feb. 1986), 1-18; Christopher Clay, *Economic Expansion and Social Change: England, 1500-1700*, 2 vols. (Cambridge, 1984), Vol. I: *People, Land, and Towns*, chapter 3, 'Rural Society', pp. 53-101; and chapter 4, 'The Progress of Agriculture', pp. 102-41; Bruce M. S. Campbell and Mark Overton, eds., *Land, Labour and Livestock: Historical Studies in European Agricultural Productivity* (Manchester and New York: Manchester University Press, 1991): especially the studies by Overton, Allen, Shiel, and Clark; Bruce M. S. Campbell and Mark Overton, 'A New Perspective on Medieval and Early Modern Agriculture: Six Centuries of Norfolk Farming, c.1250 - c.1850', *Past & Present*, no. 141 (November 1993), 38 - 105; Mark Overton, 'Re-establishing the English Agricultural Revolution', *Agricultural History Review*, 44:1 (1996), 1-20; Robert Allen, 'Tracking the Agricultural Revolution in England', *The Economic History Review*, 2<sup>nd</sup> ser., 52:2 (May 1999): 209-35; E. Anthony Wrigley, 'The Transition to an Advanced Organic Economy: Half a Millennium of English Agriculture', *The Economic History Review*, 2<sup>nd</sup> ser., 59:3 (August 2006), 425-480.

provided a strong incentive for entrepreneurial farmers to increase efficiencies per unit of labour and per acre of land. Convertible husbandry, along with the introduction of ‘floating meadows’, required very large infusions of capital, which were generally obtained by mortgaging enclosed lands, virtually impossible to do with common field farming). Those landowners and tenants in chief who did so, and those who succeeded in vastly increasing rents and profit margins, certainly were entrepreneurs, in any sense of the word, who deserve to be called ‘agrarian capitalists’. Certainly many gentry landowners did not draw even the greater share of their incomes from leasehold rentals; nor did they confine their enterprises to farming, but also invested in mining, metallurgy, and textiles. We must remember that many capitalistic industrial enterprises – in mining and metallurgy especially – were found on gentry estates; and much of the capital investments came from gentry landowners. The extent to which they financed and promoted or engaged in English industrial development in the early-modern era is yet another avenue of research that needs to be more fully explored, despite several important recent studies.<sup>63</sup>

**The Hamilton-Keynes thesis on ‘profit inflation’ and the ‘rise of industrial capitalism’ during the ‘price revolution era: the Gould alternative**

Pre-World War II scholarship on economic issues in Tawney’s century, especially those involving the Price Revolution, includes once renowned scholarly names, though clearly none of Tawney’s intellectual calibre. The first was Earl Hamilton (1899-1989), Professor of Economics at Chicago (1949-69), and President of the Economic History Association in 1951-52. His chief claim to fame in economic history is, first of all, in providing statistical foundations for a Quantity Theory-of-Money explanation for the inflation of the Price Revolution era, in many publications, from 1928.<sup>64</sup> Since the time of the French

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<sup>63</sup> See sources cited in nn. 57, 61–62.

<sup>64</sup> Earl Hamilton, ‘American Treasure and Andalusian Prices, 1503-1660: A Study in the Spanish Price Revolution’, *Journal of Economic and Business History*, 1 (February 1928), 1-35, reprinted in P.H. Ramsey, ed., *The Price Revolution in Sixteenth-Century England* (London, 1971), pp. 147-81; Earl J. Hamilton, ‘American Treasure and the Rise of Capitalism, 1500-1700’, *Economica*, 27 (Nov. 1929), 338-57; Earl Hamilton, ‘Imports of American Gold and Silver into Spain, 1503-1660’, *Quarterly Journal of Economics*, 43 (1929), 436-72; Earl Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650* (Cambridge, Mass., 1934; reissued 1965); Earl Hamilton, *Money, Prices, and Wages in Valencia, Aragon,*

philosopher Jean Bodin (1566) a majority of scholars had in fact assumed that the Price Revolution had been ‘caused’ by the influx of silver from the Americas.<sup>65</sup> But as noted earlier, that inflation had begun – in Spain, England, the Low Countries, Italy – much earlier: from at least the 1520s, long before any significant amounts of Spanish-American silver had arrived in Europe. Some economic historians, on discovering this fact, unfortunately leapt to the false conclusion that the true, fundamental cause of this inflation was population growth. In fact the initial causes were monetary, but in the form of the South German-Central European silver mining boom (ca. 1460-ca. 1550) and a financial revolution in the 1520s, issues that need not detain us here, except to note that Hamilton himself had also perceived the importance of these two issues, and did not (contrary to popular opinion) contend that the influx of such silver provided either the initial cause or later the predominant cause of inflation in the Price Revolution era.<sup>66</sup>

Hamilton’s second claim to fame, but only because his views were endorsed by John Maynard Keynes, was his 1929 thesis that the inflation of the Price Revolution was fundamentally responsible for the birth of modern industrial capitalism through the mechanism of ‘profit inflation’, a term that Keynes himself coined (in 1930).<sup>67</sup> In essence, Hamilton and Keynes argued that in this era industrial wages lagged

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*and Navarre, 1351 - 1500* (Cambridge, Massachusetts: Harvard University Press, 1936); Earl Hamilton, ‘Profit Inflation and the Industrial Revolution, 1751-1800’, *Quarterly Journal of Economics*, 56:2 (February 1942), 256-73; reprinted in F.C. Lane and J.C. Riemersma, eds., *Enterprise and Secular Change: Readings in Economic History* (London, 1953), pp. 322-49; Earl Hamilton, *War and Prices in Spain, 1651-1800* (Cambridge, Mass: Harvard University Press, 1947); Earl Hamilton, ‘Prices as a Factor in Business Growth: Prices and Progress’, *Journal of Economic History*, 12:4 (Autumn 1952), 325-49.

<sup>65</sup> George A. Moore, ed., *The Response of Jean Bodin to the Paradoxes of Malestroit and The Paradoxes, translated from the French Second Edition, Paris 1578* ( Washington, D.C.: Country Dollar Press, 1946); Georg Wiebe, *Zur Geschichte der Preisrevolution des XVI. und XVII. Jahrhunderts* (Leipzig, 1895).

<sup>66</sup> See John Munro: “Classic” Review of Earl Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650* (Cambridge, MA: Harvard University Press, 1934. xii + 428 pp.). Reviewed for EH.NET BOOK REVIEW, <eh.net-review@eh.net> on 15 January 2007. This review is archived at EH.NET, at this web site: <http://eh.net/bookreviews/library/munro>

<sup>67</sup> John Maynard Keynes, *A Treatise on Money*, 2 vols. (London, 1930), vol. II, pp. 152–63, esp. pp. 154-5: ‘It is the teaching of this Treatise that the wealth of nations is enriched, not during Income Inflations, but during Profit Inflations – at times, that is to say, when prices are running away from costs;’ and on p. 163: ‘The intervening Profit Inflation which created the modern world was surely worth while if we take a long

behind prices, particularly in England (but not so much in Spain), thereby producing growing profits, the bulk of which English entrepreneurs chose to invest in larger scale, more capital-intensive forms of manufacturing industries and other industrial or commercial enterprises, e.g., overseas joint-stock trading companies (see below). To be sure, in England, as in many other European countries, money wages did lag behind consumer prices. But those rising price levels are now measured by ‘basket of consumables’ price indexes in which about 80 percent of the commodity weights consist of foodstuffs.<sup>68</sup> In all price indexes for this era, grain prices rose the most, by the largest degree, followed by wood-fuels, and livestock prices; and prices for industrial manufactures rose by a far lesser degree. Under such circumstances, how would industrialists in particular have benefited from this decline in the real wages of their employees, a decline that would, with normal household budget limitations, have reduced their ability to buy industrial goods?

With that long-term behaviour of relative prices, true for most countries and regions in early-modern Europe, Hamilton and Keynes were certainly not justified in contending that industrialists enjoyed any verifiable extent of ‘profit inflation’: not without measuring, industry by industry, the long-term relationships between industrial wages and the wholesale prices for the manufactures that those wage-earning employees produced. For the later sixteenth- and seventeenth-century southern Low Countries, arguably then one of the most advanced industrial regions in Europe, I have found evidence for ‘profit disinflation’: i.e., a rise in industrial wages (for building craftsmen) that was, overall, greater than the rise in the industrial price index.<sup>69</sup> In any event, why would English industrial entrepreneurs (for many of whom wages did lag behind prices) have invested their extra profits, if any, in larger-scale, more capital intensive forms of industry, when labour was (relatively) so cheap, and, in real terms, becoming even cheaper?

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view.’

<sup>68</sup> See the Phelps-Brown & Hopkins (1956) ‘basket of consumables’ composite-price index, in n. 55 above.

<sup>69</sup> John Munro (2002), ‘Prices, Wages, and Prospects for ‘Profit Inflation’ in England, Brabant, and Spain, 1501 -1670: A Comparative Analysis’: 2002 working paper online at: <http://www.economics.utoronto.ca/index.php/index/research/workingPaperDetails/141>



Whether or not, in this and other eras, inflation may have reduced the factor cost of labour in this and other sectors of the economy remains an interesting if moot question. But, as John D. Gould contended in a now all but forgotten article published in 1964, inflation does generally reduce another factor cost, and in a way that more directly does promote large-scale, more capital intensive industries (but also larger-scale agricultural and commercial enterprises): namely, the cost of capital.<sup>70</sup> Thus, in so far as entrepreneurs then borrowed funds for capital investment by contracts that specified the payment of annual interest and finally the repayment of the principal, in current money-of-account terms, inflation did cheapen the costs of previously borrowed capital. Any contrary contention that lenders of this era – when annual rates of inflation were still low by modern standards – had responded by raising their interest rates is fully negated by abundant evidence that nominal interest rates were continuously falling in the sixteenth century ( in Flanders, from 20.5 percent in 1511-15 to 11.00 percent in 1566-70), so that in fact, with inflation, real interest rates fell even further.<sup>71</sup>

Perhaps, however, the real significance of the ill-formulated Hamilton thesis is that it provoked his colleague John Nef into producing an alternative thesis to explain the early-modern origins or growth of genuine industrial capitalism, one that certainly involved rational if risk-taking entrepreneurship.

**The Nef Thesis revisited (with Wrigley and Hatcher): on the Tudor-Stuart ‘energy crisis’ and an ‘early industrial revolution’**

John Nef’s counter-thesis on this same theme was that Tudor-Stuart England experienced a veritable ‘energy crisis’ in this same century, 1540-1640, and one that entrepreneurs largely resolved (in his view) in the form of an ‘early industrial revolution’, one that involved very significant industrial

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<sup>70</sup> John .D. Gould, ‘The Price Revolution Reconsidered’, *Economic History Review*, 2nd ser., 17:2 (1964), 249-66; reprinted in Ramsey (1971), *Price-Revolution in Sixteenth-Century England*, pp. 91-116.

<sup>71</sup> Herman Van der Wee, *The Growth of the Antwerp Market and the European Economy, 14th - 16th Centuries*, 3 vols. (The Hague, 1963), vol. I: *Statistics*, Appendix 45/2, pp. 525-27. The outbreak of the Revolt of the Low Countries in 1568 renders subsequent data, when available, useless, in this context. The real interest rate is the nominal rate less (minus) the rate of inflation.

innovations and larger-scale forms of enterprise.<sup>72</sup> The traditional medieval and early-modern industrial economies had been fundamentally wood-based – for both construction and fuels; and, in Nef’s view, this ‘energy crisis’ took the form of soaring wood and wood-charcoal prices, rising as much as or even more than grain prices, and certainly to a far greater extent than industrial prices. The implicit culprit was population growth: indeed, as we now know (and better than Nef), the population of England and Wales combined rose from about 2.250 million in the 1520s to reach a peak of 5.773 million in the mid-1650s.<sup>73</sup> That demographic expansion, combined with a disproportionate growth in urbanization, and a rapid growth in shipbuilding for overseas trade, led to a far more extensive deforestation than was experienced in any other region in northern Europe. Furthermore, as Nef contended, England enjoyed a singular advantage over any other European region afflicted by a similar fuel crisis: an abundant supply of readily accessible, relatively cheap coal, easily transportable by water (river or seaborne) in much of England. Thus a continuing divergence between wood-charcoal and coal prices provided industrial entrepreneurs with a strong incentive to shift to coal, a contention that subsequently, from the mid-1950s, aroused considerable, and generally very hostile, criticism from a wide variety of scholars.<sup>74</sup>

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<sup>72</sup> See the following: John Nef, *The Rise of the British Coal Industry*, 2 vols. (London, 1923; reprinted 1966). In particular, Vol. I, Part ii, ‘Coal and Industrialism’, pp. 133-264. Chapter 2 of this section is entitled: ‘An Early Industrial Revolution.’ (pp. 165-89); John U. Nef, ‘The Progress of Technology and the Growth of Large Scale Industry in Great Britain, 1540-1640’, *Economic History Review*, 1st ser., 5:1 (Oct. 1934), 3-24; reprinted in John Nef, *Conquest of the Material World* (Chicago, 1964), pp. 121-43; John Nef, ‘A Comparison of Industrial Growth in France and England, 1540-1640’, *Journal of Political Economy*, 44 (1936), reprinted in Nef, *Conquest of the Material World* (1964), pp. 144-212; John Nef, ‘Prices and Industrial Capitalism in France and England, 1540-1640’, *Economic History Review*, 1<sup>st</sup>. Ser., 7:2 (May 1937), 155-85; reprinted in Lane and Riemersma, eds., *Enterprise and Secular Change*, pp. 292-321; John Nef, *War and Human Progress: An Essay on the Rise of Industrial Civilization* (New York, 1950; reprinted 1963). See Part I (1494-1640), Chapter 4, ‘Progress of Capitalist Industry’, pp. 65-88.

<sup>73</sup> See E. Anthony Wrigley, R.S. Davies, J.E. Oeppen, and R. S. Schofield, *English Population History from Family Reconstitution*, Cambridge Studies in Population, Economy and Society in Past Time no. 32 (Cambridge and New York: Cambridge University Press, 1997), Appendix 9, pp. 613-16. See also E.A. Wrigley and R.S. Schofield, *The Population History of England, 1541 - 1871: A Reconstruction* (Cambridge and New York: Cambridge University Press, 1980), pp. 528-29.

<sup>74</sup> See in particular: Donald C. Coleman, ‘Industrial Growth and Industrial Revolutions’, *Economica*, new ser. 23 (1956), reprinted in: E.M. Carus-Wilson, ed., *Essays in Economic History*, Vol. III (London,

In this respect, there are indeed two very important defects in Nef's analyses of fuel prices, though not defects that his opponents had fully and clearly explained. First, as many opponents had noted, he made the absurd claim that England had suffered a 'national' energy crisis, when there were in fact no national markets for wood, wood-charcoal, or coal; nor could there have been with such serious deficiencies in overland transportation and commercial facilities. Charcoal, it should be noted, was not a commodity that could be easily transported, chiefly because of its friable nature: i.e., its physical instability, so that any agitation or disturbances causes the charcoal to crumble into unusable dust. Instead, in Tudor-Stuart England, there were purely regional, local markets: in some such markets, wood remained abundant – and where charcoal was created at the forest site – and other regions where it soon became scarce and expensive, especially in relation to coal.

The other defect was to indicate, from insufficient data samples, that a serious divergence in charcoal and coal prices had already occurred by the later sixteenth century. My detailed comparative analysis of various sets of wood, charcoal, and coal prices in the same regional markets (see Figure 1) indicates that, for a wide variety of such markets, the most marked divergence in relative prices did take place – contrary to the assertions of some critics – but generally not until after the 1640s, when coal prices starting falling while charcoal prices (nominal and real) generally continued to rise.<sup>75</sup> Nevertheless, for some specific

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1962), pp. 334-52; D.C. Coleman, *Industry in Tudor and Stuart England* (London, 1975), pp. 35-49; Donald C. Coleman, *The Economy of England, 1450-1750* (London, 1977), Chapter 5, 'Occupations and Industries, 1450 - 1650', pp. 69 - 90; chapter 9, 'Industrial Change, 1650 - 1750', pp. 151 - 72; Oliver Rackham, *Trees and Woodland in the British Landscape* (London, 1976); Oliver Rackham, *Ancient Woodlands: Its History, Vegetation and Uses in England* (London, 1980); Michael Zell, *Industry in the Countryside: Wealden Society in the Sixteenth Century* (Cambridge: Cambridge University Press, 1993). For an overview, see John Hatcher, *The History of the British Coal Industry*, vol. I: *Before 1700: Towards the Age of Coal* (Oxford: Clarendon Press, 1993), pp. 31-55, in effect, while acknowledging the many faults in Nef's research and analyses, lending support to the Nef thesis, as does Brinley Thomas, in two articles: 'Escaping from Constraints: The Industrial Revolution in a Malthusian Context', *The Journal of Interdisciplinary History*, 15 (Spring 1985), 729 - 54; Brinley Thomas, 'Was There an Energy Crisis in Great Britain in the 17th Century?' *Explorations in Economic History*, 23 (April 1986), 124 - 52. See also n. 84 below.

<sup>75</sup> See Figure 1, and Appendix: Table 1. The charcoal prices are taken from college and institutional accounts in Cambridge, Eton (Berkshire, near Windsor), and Westminster (London); the coal prices are similarly from these three same sources, plus (later) Greenwich, which I took from the Phelps Brown and

local markets, such as Cambridge and Westminster, the price of a ton of coal was well under half the price of a ton of charcoal – when both had about the same calorific (heating) utility – indeed as early as the 1630s.<sup>76</sup>

If an industrial shift from charcoal to coal, purely on the basis of relative prices, were the only story, it would not be worth serious consideration in a history of early-modern English entrepreneurship. The real interest lies in both the entrepreneurial and technological innovations, and consequent increase in industrial scales, that such a change in the choice of fuels necessitated. The basic technological problem involved in choosing coal over wood-charcoal lies in the fact that coal is a very dirty fuel that contaminates most products with which it comes into contact; charcoal, conversely, is a form of pure carbon, and the purest of all available fuels, explaining its world-wide use over many millennia.

There were two possible solutions to the contamination problem. For this era, the first and indeed only technological solution was the construction of a reverberatory furnace to separate the coal fuel, and its noxious fumes, from the manufactured product. First described in Vanoccio Birunguccio's *De la pirotechnica*, ca. 1540, it was a very large-scale and complex brick kiln furnace that transmitted heat by convection and reflection ('reverberation') – reflecting heat from the roof of the furnace on to the product being manufactured, while isolating the coal fuel itself and the fumes by eliminating the chimneys and using

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Beveridge price data in the Archives of the British Library of Political and Economic Science (London: LSE). The timber prices are from Cambridge alone, taken from Peter Bowden, 'Agricultural Prices, Farm Profits, and Rents', Joan Thirsk, ed., *The Agrarian History of England and Wales*, Vol. IV: 1500 - 1640 (Cambridge: Cambridge University Press), Table VI, pp. 846-850. I have converted his original base, 1450-99= 100 (7.99s for 100 faggots) to the PB&H base of 1451-75. Unfortunately, we not possess any usable coal price series that may be compared with charcoal prices, until 1584 – with the exception of coal prices alone at Hull (1471-1700): Hatcher, *British Coal Industry*, Table B.4, pp. 577-78.

<sup>76</sup> Hatcher, *British Coal Industry*, vol. I, p. 39 has correctly observed that, at Westminster, 'by the close of the 1630s charcoal was virtually twice as expensive as coal [in terms of heat produced].' An even greater difference can be found at Cambridge, if we also take account of a second factor: that a ton of charcoal and a ton of coal have almost identical calorific values, a comparison disguised in measuring charcoal prices in loads (about one tone) and coal prices in chaldrons (36 heaped bushels = 28 cwt. = 3,135 lb or 1.568 tons. In the 1630s, a ton of charcoal at Cambridge cost (on average) 27.38 shillings, but a ton of coal cost only 10.70 shillings. See prices in James E. Thorold Rogers, *History of Agriculture and Prices in England*, 7 vols. (Oxford, 1866-1902), Vol. IV (1882), pp. 385-7; Vol. V (1882), pp. 398-402. But in terms of just relative prices, with a base 1580-89 = 100, the charcoal price index had risen to 140.3 in 1630-39, while the coal price index had risen 126.9. For calorific values, see Hatcher, *Coal Industry*, p. 39.

underground pipes to draw in fresh air.<sup>77</sup> This new furnace also required hydraulic machinery in order to fan the burning coal fuels with air (oxygen) to achieve the required high levels of combustion. Such complex furnaces obviously required a quantum leap in the scale of capital investment; and that also meant a dramatic change from simple artisanal production to true industrial capitalism, employing not traditional artisans (with their own capital), but wage-earning labourers, indeed factory workers.

Would this far more costly furnace technology have threatened the profit margins of the new industrial capitalists? Whatever their initial fears and expectations, the answer is no. For Nef's so-called 'industrial revolution' in fuel technologies in fact involved three separate sets of cost reductions. First, the great increase in industrial scale that this new fuel technology required ultimately meant a sharp fall in the marginal costs of production, provided that a commensurately large volume of production – and thus sales – had been achieved (i.e., large enough to distribute the initially high fixed costs over the production run, so that unit costs fell). Second, industrial capitalists achieved gains in transaction, organizational, and labour costs by concentrating production in one centralized, factory-like unit. Third, of course, they benefited by substituting relatively cheaper coal for ever more costly charcoal, at least generally from the 1640s. Nef's chief point, therefore, is that industrial entrepreneurs, facing this 'energy crisis' – even if Nef misdated the real era of crisis – could have survived to prosper only by engaging in a technological change that in turn demanded a change in industrial organization, to achieve sufficiently larger economies of scale.

What examples of the new 'industrial capitalism', specifically for early-modern (later Stuart-Hanoverian) England, did Nef and other historians of the British coal industry, such as John Hatcher, provide? The chief examples are the following industries that used this reverberatory furnace technology to produce the following products: glass (perhaps the first industry, ca. 1610),<sup>78</sup> beer (brewing with hops),

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<sup>77</sup> Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (Oxford and New York: Oxford University Press, 1990), p. 62; see also see the sources cited in nn. 72, 74, above.

<sup>78</sup> Glass-making is a good example of an industry that had to adopt the new furnace technology, because it obviously could not have transported its delicate products from forest sites along bad roads to urban markets; and indeed it had to locate as closely as possible to those markets. See D.W. Crossley, 'The

bricks, clay tiles, pottery making, lime-burning (construction and agriculture), soap, paper, gunpowder, brass wares, salt (sea-water evaporation), alum and dyestuffs, sugar refining (post-1660). In the field of metallurgy, the new coal-burning industries included those of calcining ores (burning out impurities before smelting); copper-based industries, especially those making brass and bronze alloys; metallic processes in separating silver from lead; the final finishing of many metals, i.e., in drawing wire, making nails. None of these was truly 'new', of course, in terms of the product, but rather in terms of industrial technology; and many did become important as import-substitution industries.

Obviously such industries could have been successful in achieving the necessary scale economies only if they had found mass markets to consume these products. Such was not the case in terms of export markets, for none of these 'new' industries was responsible for any significant exports (except a few products exported to West African and American markets). They were far more successful in the domestic markets: thanks to the aforementioned population growth. Although, as noted earlier, the population of England and Wales had reached seventeenth-century peak of 5.773 million in 1656, and although that population thereafter did experience some decline and stagnation, it rose again from the 1720s to reach a level of 6.757 million in 1761, on the eve of the modern Industrial Revolution era. But far more dramatic and certainly far more important was the growth of London itself. Having been relatively insignificant in 1500, with a population of only about 50,000, it had grown to 200,000 by 1600, to 350,000 in 1650 – when it had become indisputably the largest city in Europe – and to 550,000 in 1750. That provided a highly efficient, concentrated, mass-market with very significant reductions in transaction costs from the very density of sales.<sup>79</sup>

Equally important was the fact that such products as glass, bricks, soaps, dyestuffs, beer,

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Performance of the Glass Industry in Sixteenth-Century England', *Economic History Review*, 2nd ser., 25:3 (Aug. 1972), 421-33; Hatcher (1993), *British Coal Industry*, pp. 422-58; Mokyr (1990), *Lever of Riches*, p. 62 (also for the date).

<sup>79</sup> See n. 73, above.

brass- and bronze-wares enjoyed significant price elasticities of demand, so that cost and then competitive price reductions ensured a more than proportional increase in the quantity demanded and consumed. The same effect was achieved, in this era of steadily rising real-wage incomes, from the 1650s, for those products that similarly enjoyed a high income elasticity of demand.<sup>80</sup>

Other major manufacturing industries of this era did not, however, enjoy any such changes and benefit from this new furnace technology. Woollen textiles, which collectively remained by far England's most important manufacturing industry, producing by far its most important, overwhelmingly dominant exports until the eighteenth century, did not undergo any truly significant technological changes, not even with the rise of the so-called New Draperies, until the actual, and true Industrial Revolutions of the later eighteenth century, i.e., from the 1760s.<sup>81</sup> Indeed productivity in the eighteenth-century woollen industry remained about the same as that documented for the fifteenth century.<sup>82</sup>

Furthermore, England's other major and growing industry, iron manufacturing, could not use the new furnace technology. Until the early eighteenth century, it remained fully dependent on charcoal (and also on water power). The reason for that is very simple: smelting iron ore requires the direct contact of the ore, as ferric oxide ( $\text{Fe}_2\text{O}_3$ ), with the fuel, so that the carbon in the charcoal unites with the oxygen in ferric

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<sup>80</sup> For the evidence on rising real incomes in this era, at least in the English building trades, see Phelps Brown and Hopkins (1956), 'Seven Centuries of the Prices', pp 296-314; and Robert Allen, 'The Great Divergence in European Wages and Prices from the Middle Ages to the First World War', *Explorations in Economic History*, 38:4 (October 2001), 411 - 47; Munro (2002), "Prices, Wages."

<sup>81</sup> In 1640, when textiles still accounted for almost all of English exports, 92.3 percent by value, the woollens of the Old Draperies still exceeded the value of the products of the New Draperies (bays, says, serges, perpetuanas, etc.), but not by much: 48.9 percent for the former vs. 43.3 percent, for the latter. Clay (1984), *Economic Expansion and Social Change*, Vol. II, Table XIII, p. 144. See also Herman Van der Wee (in collaboration with John Munro), 'The Western European Woollen Industries, 1500 - 1750', in David Jenkins, ed., *The Cambridge History of Western Textiles*, 2 vols. (Cambridge and New York: Cambridge University Press, 2003), Vol. I, pp. 397- 472.

<sup>82</sup> John Munro, 'Medieval Woollens: Textiles, Textile Technology, and Industrial Organisation, c. 800 - 1500', in David Jenkins, ed., *The Cambridge History of Western Textiles*, 2 vols. (Cambridge and New York: Cambridge University Press, 2003), Vol. I, pp. 181-227; John Munro, 'Textile Technology', in Joseph R. Strayer, et al., eds., *Dictionary of the Middle Ages*, 13 vols. (New York: Charles Scribner's Sons/MacMillan, 1982-88), Vol. 11 (1988), pp. 693-711.

oxide to liberate the iron (Fe), while producing carbon dioxide: CO<sub>2</sub>. The initial solution to that problem, and at the same time, the previously indicated second solution to the overall ‘coal problem’, came in 1709-10, with Abraham Darby’s development of coke fuels, which meant the distillation of coal into coke, in an airless furnace, as a virtually purified form of carbon.<sup>83</sup> It did not, however, then produce an ‘industrial revolution’, because initially coke fuels were more expensive than charcoal fuels, and coke-smelting also required extra refining costs, in eliminating silicon (which, however, improved the quality of cast iron). Coke-smelting became fully cost-effective and thus successful, indeed ‘revolutionary’, only with application of Smeaton’s piston-air pumps (replacing bellows, ca. 1760) and then James Watt’s steam engine to power them, in 1776. It should be noted that most of the trenchant opposition to the Nef thesis concern his – and T. S. Ashton’s -- views on the ‘tyranny of wood and water’, in curbing the growth of the early-modern iron industry, a story and debate beyond the scope of this study, and thus belonging to the study of the eighteenth-century Industrial Revolution.<sup>84</sup> In summary, and in all these respect, it is fair to criticize the Nef thesis by

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<sup>83</sup> *Columbia Encyclopedia*: ‘Coke is a solid carbonaceous residue derived from low-ash, low-sulfur bituminous coal. The volatile constituents of the coal (including water, coal-gas and coal-tar) are driven off by baking [the coal] in an *airless* oven at temperatures as high as 1,000 degrees Celsius, so that the fixed carbon and residual ash are fused together. Since the smoke-producing constituents are driven off during the coking of the coal, coke forms a desirable fuel....’

<sup>84</sup> See the sources cited in n. 74 above; and also T. S. Ashton, *Iron and Steel in the Industrial Revolution* (Manchester, 1924; reprinted 1951), pp. 1-23; T. S. Ashton and J. Sykes, *The Coal Industry of the Eighteenth Century* (Manchester, 1929; reprinted 1964); H. R. Schubert, *The History of the British Iron and Steel Industry from ca. 450 B.C. to A.D. 1775* (London, 1957); George Hammersley, ‘The Crown Woods and their Exploitation in the Sixteenth and Seventeenth Centuries’, *Bulletin of the Institute of Historical Research, University of London*, 30 (1957), 154-59; George Hammersley, ‘The Charcoal Iron Industry and its Fuel, 1540-1750’, *Economic History Review*, 2nd ser. 26:4 (1973), 593-613; George Hammersley, ‘The State and the English Iron Industry in the Sixteenth and Seventeenth Centuries’, in Donald Coleman and A. H. John, eds., *Trade, Government, and Economy in Pre-Industrial England: Essays Presented to F. J. Fisher* (London, 1976), pp. 166 - 86; Michael Flinn, ‘Revisions in Economic History: XVII: The Growth of the English Iron Industry, 1660-1760’, *Economic History Review*, 2nd ser., 11:1 (1958), 144-53; Michael Flinn, ‘Timber and the Advance of Technology: A Reconsideration’, *Annals of Science*, 15 (1959), 109-20; Michael Flinn, ‘Technical Change as an Escape from Resource Scarcity: England in the Seventeenth and Eighteenth Centuries’, in Antoni Maçak and William N. Parker, eds., *Natural Resources in European History: a Conference Report* (Washington, D.C.: Resources for the Future, 1978), pp. 139-59; Michael Flinn, *The History of the British Coal Industry, Vol II: 1700 - 1830: The Industrial Revolution* (Oxford: Clarendon Press, 1984), esp. pp. 23-35, 286-328; Sybil Jack, *Trade and Industry in Tudor and Stuart England* (London, 1977), especially chapter 2, pp. 66-121; Philip Riden, ‘The Output of the British Iron Industry Before 1870’,



contending that no ‘industrial revolution’ took place in Tudor-Stuart (or even early Hanoverian) England: there was no significant growth of the industrial sector, either in terms of outputs, exports, or employment; and no significant transfer of labour and resources from the agrarian to the industrial, commercial, financial, and service sectors as did take place in the nineteenth century.

Nevertheless, we must not overlook the important fact that coal was assuming an ever greater role in the British industrial economy from the sixteenth to eighteenth centuries, well before the onset of the ‘Industrial Revolution’, and thus long before any comparable industrial changes on (or in most of) the continent. John Hatcher has contended that: ‘In the latter half of the seventeenth century, sweeping changes occurred in the pattern of industrial coal consumption’, so that ‘by 1700 coal was the preferred fuel of almost all fuel consuming industries, and access to coal supplies had already begun to exert a determining influence over industrial location’.<sup>85</sup> Even if the aforementioned textile industries did not, as noted earlier, undergo any significant technological changes in this era, certainly none involving power, nevertheless they also experienced a major growth in coal consumption for many of their industrial processes: from combing to dyeing to finishing; and in the production of dyestuffs and mordants.<sup>86</sup> Hatcher estimates that British coal

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*Economic History Review*, 2nd ser., 30:3 (August 1977), 442-59; Charles K. Hyde, ‘The Adoption of Coke-Smelting by the British Iron Industry, 1709-1790’, *Explorations in Economic History*, 10:4 (Summer 1973), 397-418; Charles K. Hyde, *Technological Change and the British Iron Industry, 1700-1870* (Princeton, 1977), especially chapter 1, pp. 7-22; also chapter 3, pp. 42-52; Sidney Pollard, ‘A New Estimate of British Coal Production, 1750-1850’, *Economic History Review*, 2nd ser. 33:2 (May 1980), 212-35; J. R. Harris, *The British Iron Industry*, Studies in Economic and Social History series (London: Macmillan, 1988). See also Mokyr (1990), *Lever of Riches*, pp. 93, 160, who cites Flinn (1958, 1978) to dispute the ‘scarcity of wood’ thesis, stating that Flinn’s ‘evidence on prices does not confirm this view’. But Flinn provides no statistics on prices in these studies; and the evidence on wood, charcoal and coal prices in Figure 1 contradicts Flinn’s views, though, as noted above, only from the 1640s. No comparative prices are provided in Flinn (1984), *British Coal Industry*; but see Table 9.4, pp. 303-4, for an index of coal prices, 1700-1830. The quinquennial mean index (base 1770-79=100) falls from 90.94 in 1701-05 to 80.22 in 1726-30, and thereafter rises slowly into the early era of the Industrial Revolution, reaching 95.60 in 1771-75; over the same period, the Phelps Brown Hopkins (1956) index (adjusted to this same base) rises from 70.85 in 1701-05 to 103.45 in 1771-75: i.e., rising more than coal price index.

<sup>85</sup> Hatcher (1993), *British Coal Industry*, pp. 450, 458, respectively.

<sup>86</sup> Jennifer Tann, ‘Fuel Saving in the Process Industries during the Industrial Revolution: a Study in Technological Diffusion’, *Business History*, 15 (1973), 149-59; E. Anthony Wrigley, *Continuity, Chance*

output (England, Scotland, Wales) had expanded almost 12-fold: from about 227,000 tons in 1560 to about 2.640 million tonnes in 1700, when it was supplying about half of England's fuel needs.<sup>87</sup> Anthony Wrigley has furthermore observed that British coal output was then at least five times greater than the combined output in the rest of the world; by 1800, British coal output had expanded at least five-fold, to about 15 millions tonnes a year, which was at least five times greater than the aggregate coal output in continental Europe.<sup>88</sup> By 1830, according to Michael Flinn's estimates, Great Britain was producing 30.861 million tonnes, over ten times as much as Britain had produced in 1700.<sup>89</sup>

The aforementioned rapid and dramatic growth in London's population itself had an a major impact on the English coal-mining industry and trade, for that growth could have occurred only with and because of massive imports of coal, especially for domestic heating, chiefly by sea from Newcastle, into London. Certainly London could not have imported enough wood to supply the city's need for both (and most especially) domestic and industrial fuels. As Wrigley has pointed out, a ton of coal produces 'about twice as much heat as the same weight of dry wood'; and, further noting that an acre of woodland then produced only about two tons of dry wood a year, he contends that the heat produced by one million tons of coal (mined and seaborne) would have required one million acres of forested land.<sup>90</sup>

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*and Change: The Character of the Industrial Revolution in England* (Cambridge University Press, 1988), p. 78; Hatcher (1993), *British Coal Industry*, pp. 442-44.

<sup>87</sup> *Ibid.*, Table 4.1, p. 68.

<sup>88</sup> Wrigley (1998), *Continuity, Chance, and Change*, p. 54. See also E. Anthony Wrigley, 'The Divergence of England: the Growth of the English Economy in the Seventeenth and Eighteenth Centuries', *Transactions of the Royal Society*, 6<sup>th</sup> ser., 10 (2000), 117-41; Hatcher, *British Coal Industry*, pp. 555-56 (also citing a figure of 15 millions tons for 1800), stating that 'the major turning point for the British coal industry occurred in the second half of the eighteenth century'; Pollard (1980), 'British Coal Production, 1750-1850', pp. 212-35.

<sup>89</sup> Flinn (1984), *History of the British Coal Industry*, Table 1.2, p. 26, providing an estimate of 3.033 million tonnes for 1700. Hatcher's coal statistics (1993) differ for 1700, as noted: 2.640 million tonnes. See nn. 84-85 above.

<sup>90</sup> Wrigley (1988), *Continuity, Chance and Change*, pp. 54-55, also stating (n. 52) that 'the heat output of combustion of bone-dry wood is 4,200 kcal/kg compared with 8,000 kcal/kg for bituminous coal'. For a

Coal, as so many historians have contended, became the essential core of European industrialization in the eighteenth and nineteenth centuries, involving very major technological and entrepreneurial changes.<sup>91</sup> Indeed, Wrigley has put forward the seminal thesis that English economic growth and the Industrial Revolution both depended upon a shift from an ‘organic’ (wood) to a ‘mineral’-based economy (coal).<sup>92</sup> Coal, distilled into coke, replaced charcoal almost everywhere in metallurgy (amalgamating smelting and refining, with vastly increased scales of production); coal-fired steam engines ultimately replaced water-mills, while later coal-fired steam turbines produced a new and very cheap form of power in electricity. And finally, coal also became the fundamental base for a new set of chemical industries that also constituted part of the so-called ‘Second Industrial Revolution’. When considered not just in purely quantitative terms but more so in qualitative technological changes, especially in terms of an entrepreneurial response to major production bottlenecks, Nef had supplied the essence of a good case – England’s entrepreneurial and industrial primacy in using coal - - but one undermined by bad data, and exaggerated claims of growing industrial output, and chronological problems, so that his thesis has a much greater validity for the century following Tawney’s century – the century preceding the Industrial Revolution.

### **Overseas expansion and changes in commercial-financial structures:**

#### **I. The Atlantic ship**

There remains, however, one further set of English economic and entrepreneurial developments in Tawney’s century – actually beginning in the previous century, but in the Iberian peninsula – that demands our attention in this study: the age of overseas maritime exploration, colonization, and trade that ultimately brought about economic ‘globalization’. The combination of technological innovation and

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very similar estimate, see Hatcher (1993), *British Coal Industry*, p. 39.

<sup>91</sup> A recent, iconoclastic dissenting view can be found in Gregory Clark and David Jacks, ‘Coal and the Industrial Revolution, 1700 - 1869’, *European Review of Economic History*, 11:1 (April 2007), 39-72. I must note that their data set are very different from – and in my view – less complete than what I have produced in Figure 1 (and Appendix: Table 1); and their comparisons of fuel prices are very different as well.

<sup>92</sup> See nn. 88-90 above.

entrepreneurial ingenuity that physically and economically made this possible – indeed in a very major form of industrial capitalism for this early-modern era – was the development of the so-called Atlantic Ship or Full Rigged Ship.<sup>93</sup> Portuguese shipyards, responding to demands from ocean-going mariners, who had been unable to cope with the Atlantic Trade Winds off the African coast, had initiated this industrial and commercial transformation by copying and adapting the triangular lateen-sail rigging of the Arabic coastal ship, in fact, a very small boat, known as the *dhow*; but the result was a much larger ship (40 to 200 tonnes) known as the *caravel*, with correspondingly much larger masts. It was that lateen-rigging that provided the *caravel* with the manoeuvrability to cope with these Atlantic Trade Winds, and allowed Portuguese mariners, from 1434, to advance south of Cape Bojador (26° N), and thus to commence their commercial and colonial acquisitions along the West African coast, and ultimately to Asia (India and the East Indies) in a highly successful search for both gold and spices, though with the aid of a much improved ship.

Subsequently, some unknown Iberian shipyards made the next advance in ship rigging, perhaps in the mid fifteenth century, by combining the large square canvas sails of the northern Hanseatic *cogge* – providing power and speed – with the *caravel*'s lateen sails: a small lateen spritsail on the bow, the square sails in the middle, and a large lateen sail on the rear or mizzen-mast. These Full Rigged or Atlantic ships, better known as *carracks* and *galleons*, were much larger than the Portuguese *caravels*, expanding in size to 600 tonnes in the early sixteenth century and then to 1500 tonnes by the 1590s. A major factor in that increased scale was the addition of naval artillery: up to 50 or 60 cannons, placed both on deck and below

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<sup>93</sup> See Richard Unger, *The Ship in the Medieval Economy, 600-1600* (London and Montreal, 1980); Richard Unger, 'Warships and Cargo Ships in Medieval Europe', *Technology and Culture*, 22 (April 1981), 233 - 52; Richard Unger, 'Portuguese Shipbuilding and the Early Voyages to the Guinea Coast', in Academia Portuguesa da História, ed., *Vice-Almirante Avelino Teixeira Da Mota, In Memoriam*, vol. I (Lisbon, 1987), pp. 229-49; Carlo Cipolla, *Guns, Sails, and Empires: Technological Innovation and the Early Phases of European Expansion 1400 - 1700* (New York, 1965); Charles Boxer, *The Portuguese Seaborne Empire, 1415 - 1825* (London, 1969); Martin Elbl, 'The Portuguese Caravel and European Shipbuilding: Phases of Development and Diversity', *Revista da Universidade de Coimbra*, 33 (1985), 543-72; M. Elbl, 'The Caravel and the Galleon', in Robert Gardiner, ed., *Conway's History of the Ship*, III: *Cogs, Caravels and Galleons* (London, 1994), pp. 91-98; Archibald Lewis and Timothy Runyan, *European Naval and Maritime History, 300 - 1500* (Bloomington, 1985).

deck. It was this large, full-rigged, heavily armed ship that allowed Europeans to dominate the world's oceanic trade routes up to the nineteenth century; and, it may be considered, along with Gutenberg's printing press (ca. 1450), with moveable type, as the most important technological innovation of the fifteenth century – and certainly a marvel of European entrepreneurship.

Another major aspect of this new age of overseas expansion was, of course, the vast influx of Spanish American treasure, silver, especially, which did so much to fuel and promote the ongoing inflation of the Price Revolution era.<sup>94</sup> But surely the more important economic function and consequence of that vast influx was in providing Europeans with essential means of expanding their trade with Asia (all the more so, since silver generally commanded a higher value in relation to both gold and goods in Asia than in Europe).

## **II. The crises in English trade with the Antwerp market in the 1550s**

If we date the beginnings of this new era with Portugal's capture of the Moroccan port of Ceuta in 1415, and then with the Portuguese and Spanish acquisitions in Africa, Asia, the Atlantic islands, and the Americas, to say the 1520s, the English appear to have been remarkably slow to seek out these new overseas business opportunities. One reason may have been that English exports, once predominantly in the form of wool, were, by the 1520s almost entirely in the form of woollen cloth – accounting for at least 90 percent of the total value of all exports. Almost all of this export trade was directed to the cross-Channel port and market of Antwerp. Indeed, the original tripod upon which Antwerp had gained its role as the pre-eminent commercial, financial, and industrial centre at the dawn of the modern era, from ca. 1460 to ca 1560 had consisted of: English woollen cloths; South German metals (silver, copper), fustians, and banking; and finally, from 1501, the staple in the Portuguese spice trade from the East Indies. English merchants, having been excluded from Flanders, from the Baltic, and the Mediterranean, had found only this one available outlet, in the Antwerp market, where German merchants avidly sought their woollens (finished in the Antwerp region) as their chief return cargo, just as the Portuguese later so avidly sought South German silver,

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<sup>94</sup> See Munro (2003), 'Monetary Origins of the Price Revolution', in n. 8 above.

copper, and banking to conduct their new African and Asian trades.<sup>95</sup>

The English cloth trade boom, from ca. 1460 to 1552 – almost entirely coinciding with the Tudor Enclosure movement (then chiefly for sheep pastures) – reached its culmination, followed by disaster, in the Great Debasement of 1542-1552, which Henry VIII and his successors had undertaken to finance their wars. Then, abruptly in 1552, Northumberland's Protectorate government abruptly revalued the English coinage by 253 percent (a 3.5 fold increase in silver contents). The obvious consequence of his drastic revaluation was a sharp rise in the foreign exchange value of the pound sterling, and hence a sharp increase (if not fully proportional) in the overseas cost of buying English woollens, whose sales soon plummeted on the Antwerp market.<sup>96</sup> Since the previous debasements had provided such a stimulus to cloth exports, the Antwerp market may have experienced a glut, so that exports might have fallen, even without the revaluation (though not as much). From 1546-50 to 1551-55, London's quinquennial mean cloth exports had fallen by 10.4 percent: from 123,780 broadcloths to 110, 888 broadcloths; and in 1560s London's mean exports had fallen to just 85,952 broadcloths (an overall decline of 30.5 percent).<sup>97</sup> By the end of that decade, the

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<sup>95</sup> See John Munro, 'Patterns of Trade, Money, and Credit', in James Tracy, Thomas Brady Jr., and Heiko Oberman, eds., *Handbook of European History in the Later Middle Ages, Renaissance and Reformation, 1400 - 1600*, 2 vols. (Leiden: E.J. Brill, 1994-95), Vol. I: *Structures and Assertions* (1994), pp. 147-95; John Munro, 'The Symbiosis of Towns and Textiles: Urban Institutions and the Changing Fortunes of Cloth Manufacturing in the Low Countries and England, 1270 - 1570', *The Journal of Early Modern History: Contacts, Comparisons, Contrasts*, 3:1 (February 1999), 1-74.

<sup>96</sup> John D. Gould, *The Great Debasement: Currency and the Economy in Mid-Tudor England* (Oxford, 1970), p. 136; Christopher E. Challis, 'The Debasement of the Coinage, 1542 - 1551', *Economic History Review*, 2nd ser., 20:3 (Dec. 1967), 441-66; Christopher E. Challis, 'The Circulating Medium and the Movement of Prices in Mid-Tudor England', in Peter Ramsey, ed., *The Price Revolution in Sixteenth-Century England*, Debates in Economic History series (London, 1971), pp. 117-46; Christopher Challis, *The Tudor Coinage* (Manchester, 1978); Van der Wee (2003), 'The Western European Woollen Industries, 1500 - 1750', pp. 397- 472.

<sup>97</sup> After 1552, cloth export statistics are available only for London, which, however, then accounted for over 90% of total exports, and virtually all exports to the Antwerp market. Statistics extracted from E.M. Carus-Wilson and Olive Coleman, *England's Export Trade, 1275-1547* (Oxford, 1963), pp. 36-116; A.R. Bridbury, *Medieval English Clothmaking: An Economic Survey* (London: Heinemann, 1982), Appendix F, pp. 118-22; Gould (1970), *The Great Debasement*, p. 136; and F.J. Fisher, 'Commercial Trends and Policy in Sixteenth-Century England', *The Economic History Review*, 1st ser., 10:2 (Nov. 1940), 95-117.

outbreak of the Revolt of the Netherlands (1568-1609) made Antwerp quite inhospitable to English trade; but long before those events, the English had already undertaken their new search for alternative trading ports, and that involved a radical change and transformation in business organization: in the form of the joint stock company.

### III. The new joint stock companies of the later sixteenth century

The very first such overseas joint-stock trading company, the Muscovy or Russia Company, was established in May 1553, in the direct aftermath of the Antwerp crisis.<sup>98</sup> It is also the first (historically verifiable) joint-stock company, a revolutionary new form of business organization.<sup>99</sup> The founders of this new venture subscribed a capital sum of £6,000 through the sale of shares with a par value of £25 (i.e., 240 shares). This capital was then invested, with additional expenditures of £4,000, in the purchase of three ships and trading goods. Two ships were lost in the ice of the White Sea, en route to Russia (which then had no port in the Baltic), but the third, under Richard Chancellor, did reach Archangel, and successfully negotiated a trade treaty with Czar Ivan IV ('The Terrible'). On his return, Chancellor obtained a royal charter that incorporated the new company 'as one bodie and perpetuall fellowship and communalitie', with a monopoly on all trade with Russia and adjacent regions in Asia. By 1563, the capital stock had been increased to £33,600, with permission to call upon a further £60 from each of the 240 share or stock holders (i.e., an additional £14,400 to bring the total capital to £48,000).<sup>100</sup>

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<sup>98</sup> Its original title was *the Mysterie and Companie of the Marchants Adventurers for the discoverie or regions, dominions, islands and place unknown*. In 1556, by an act of Parliament, its name was shortened to: *the Fellowship of English Merchants for discovery of New Trades*. See the following note.

<sup>99</sup> The classic study is and remains: William Robert Scott, *The Constitution and Finance of English, Scottish and Irish Joint-Stock Companies to 1720*, 3 vols. (Cambridge: Cambridge University Press, 1912; reissued: Gloucester, Mass.: Peter Smith, 1968). Similar joint-stock companies were set up in the Dutch Republic, or Republic of the United Provinces (fundamentally established by the Union of Utrecht, in January 1579); and they may have existed earlier in the former county of Holland – known as *rederij* in maritime shipping and commerce.

<sup>100</sup> Scott (1912), *Joint Stock Companies*, vol. I, pp. 18-21; vol. II, pp. 36-69, carrying the history of the company to its effective end in 1699, when it lost its monopoly in the Russian-Persian trade. The Company was not dissolved, however, until as late as 1917. See also Thomas S. Willan, *The Early History*

The revolutionary nature of this new form of business organization can best be understood by comparing it with that of the famous Merchants Adventurers Company, first established in 1407, for the cloth export trade, but given a royal charter with certain monopoly rights on the cloth export trade in 1505.<sup>101</sup>

It was a 'Regulated Company' in the sense that it possessed such a charter and monopoly rights, whose enforcement required a governing council with an appointed Governor and his assistants and a Court in its overseas headquarters at Antwerp. But the actual commerce, the cloth-export trade, was conducted by a large number of private firms – family firms and simple partnerships – who operated on their own account under the protective umbrella of the Merchants Adventurers. They raised their capital by pooling funds of family members and/or those of the partners, generally limited to six members; other capital was raised by borrowing, often by mortgaging properties. Because of the nature of their trade – the very short distance cross-Channel trade between London and Antwerp – their capital requirements, both in terms of fixed and working capital, were small. Rarely did such merchants own and operate their own ships; and generally they bought their woollens, on credit, at Blackwell Hall, and simply leased space on a small ships making this making this cross-Channel journey. With a succession of cloth sales at Antwerp, and with the investment of the proceeds in the purchase of various goods from the Brabant Fairs, for importation into England (on behalf of the Mercers Company of London), these Merchants Adventurer enjoyed very quick turnovers of cargoes

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*of the Russia Company, 1553 - 1603* (Manchester: Manchester University Press, 1956, repr. 1968); T.S. Willan, *The Muscovy Merchants of 1555* (New York: A. M. Kelly, 1973); T. S. Willan, *Studies in Elizabethan Foreign Trade* (New York: A. M. Kelly, 1968).

<sup>101</sup> Scott (1912), *Joint Stock Companies*, vol. I, pp. 8-12. See also Eleanora Carus-Wilson, 'The Origins and Early Development of the Merchant Adventurers' Organization in London as Shown in their own Medieval Records', *The Economic History Review*, 1<sup>st</sup> ser., 4:2 (April 1933), 147-76; reprinted in Eleanora Carus-Wilson, *Medieval Merchant Venturers: Collected Studies* (London: Methuen and Co., 1954), pp. 143-182; Jan A. Van Houtte, 'La genese du grande marché international d'Anvers à la fin du moyen age', *Revue belge de philologie et d'histoire*, 19 (1940), 87-126; J.A. Van Houte, 'Anvers aux XVe et XVIe siècle', *Annales: E.S.C.* 16 (1961), 248-78; Van der Wee, *Growth of the Antwerp Market*, vol. II, Part I, chapters 2-5; John Munro, 'Bruges and the Abortive Staple in English Cloth: An Incident in the Shift of Commerce from Bruges to Antwerp in the Late Fifteenth Century', *Revue belge de philologie et d'histoire/Belgisch tijdschrift voor filologie en geschiedenis*, 44 (1966), 1137-59; Ralph Davis, 'The Rise of Antwerp and its English Connection', in D. C. Coleman and A. H. John, eds., *Trade, Government, and Economy in Pre-Industrial England: Essays Presented to F.J. Fisher* (London, Weidenfield and Nicholson, 1976), pp. 2-20.



and business transactions – a matter of a few weeks at most, permitting them either to reinvest profits in this bi-lateral trade or to invest them by purchasing a bill of exchange from some other merchants about to embark on their own Antwerp-based trade.

The Russia (Muscovy) Company, in sharp contrast, was established to conduct very long-distance, truly overseas trading ventures each of which required a year or more to be conducted and return a profit. That was indeed true of all the new overseas trading companies. Such a very large scale, long term enterprise could hardly have been financed by the traditional methods of pooling funds from family members and a few partners. Instead the necessary initial fixed capital could have been raised only by the sales of shares of ownership, to often hundreds of investors.

The origins of this form of business organization remain obscure – they may have been Italian, in that medieval *commenda* contracts were often divided into shares, or *loca*; but *commenda* contracts were undertaken for only one maritime venture.<sup>102</sup> For this early-modern English business organization, the term joint-stock meant that the ‘capital stock’ was held collectively by all of the stock- or share-holders, as joint owners of the company: it was a collective business venture with a common capital, invested in the company, and not in individual participants. Each shareholder had the right to cast votes for the directors of the company, based on the number of shares that each investor held. Stockholders received a share of the profits, in the form of dividends declared per shares; and of course they had the right to sell their shares to other investors. The sale of shares, or the death of shareholders in no way affected the life and operations of the company, as was the case with a partnership. A partnership existed only so long as all of the partners continued to own the firm; and thus the withdrawal or death of partner necessitated the legal cessation of the firm, which could continue only with a new partnership contract. In contrast, a joint-stock company continued to exist as the same business venture, until such time as the shareholders voted to wind up the

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<sup>102</sup> Scott (1912), *Joint Stock Companies*, Vol. I, p. 18, speculates that the Russia Company’s first Governor, Sebastian Cabot (c. 1476-1557), son of the ill-fated John Cabot (whose last naval expedition disappeared at sea, in 1498, without a trace), may have learned about joint-stock organization from his native Italy.

affairs of the company, and to distribute the invested capital amongst the existing shareholders.

The other two major joint-stock companies in overseas trade, established in the later sixteenth century, were the following: (1) The Levant Company: originally created in 1581 as the Turkey Company, and then re-organized as the far better known Levant Company in 1591; and (2) The East India Company: created in 1600, with a royal charter and a monopoly on trade with South Asia (i.e., with those parts of Asia not included in the Russia Company's monopoly charter). Mention must also be made of another and even earlier overseas trading venture: the Eastland Company, established in 1579. Its founders, however, were members of the still thriving Merchants Adventurers Company, who created it as their offspring, as another Regulated Company (with a royal charter). It was not, therefore, a joint stock company. Its objectives were to market English woollens (principally) in Prussia and Livonia, in the eastern Baltic, and to bypass Dutch merchants in acquiring Baltic grain and timber. It marked England's first significant re-entry into the Baltic, in well over a century, since their virtual exclusion by the Treaty of Utrecht in 1464. In that long interval, however, the Dutch had gained such an overwhelming supremacy in the Baltic trades that their ships outnumbered the English by about 13:1; and in general, it was a failure in competing with the Dutch during the later sixteenth and early seventeenth centuries.<sup>103</sup>

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<sup>103</sup> On Dutch trade and Baltic commerce, see in particular Jonathan I. Israel, *Dutch Primacy in World Trade, 1585 - 1740* (Oxford: Clarendon Press, 1989); Jan Luiten Van Zanden, *The Rise and Decline of Holland's Economy: Merchant Capitalism and the Labour Market* (Manchester: Manchester University Press, 1993); Jan de Vries and Ad Van der Woude, *Nederland 1500 - 1815: De eerste ronde van moderne economische groei* (Amsterdam: Balans, 1995); republished in English translation as *The First Modern Economy: Growth, Decline, and Persistence of the Dutch Economy, 1500 - 1815* (Cambridge and New York: Cambridge University Press, 1997); Richard W. Unger, *Ships and Shipping in the North Sea and Atlantic, 1400 - 1800*, Variorum Collected Series CS 601 (Aldershot and Brookfield, Vt., Ashgate, 1997); Aksel Christensen, *Dutch Trade to the Baltic About 1600: Studies in the Sound Toll Registers and Dutch Shipping Records* (Copenhagen, 1941), pp. 17-24, 34-48, 401-21; Marian Malowist, 'L'expansion économique des Hollandais dans le bassin de la Baltique aux XIVe et XVe siècles', republished in his *Croissance et regression en Europe, XIVe - XVIIe siècles*, in the series *Cahiers des Annales*, No. 34 (Paris: 1972), pp. 91-138; Philippe Dollinger, *La Hanse, XIIe - XVIIe siècles* (Paris, 1964): Part II, Chapters 5, 6; Part III, Chapters 1 - 2; Artur Attman, *The Struggle for Baltic Markets: Powers in Conflict* (Goteborg, 1979); Johanna Maria Van Winter, ed., *The Interactions of Amsterdam and Antwerp with the Baltic Region, 1400 - 1800 (De Nederlanden en het Oostzeegebied, 1400 - 1800)*, Het Nederlandsch Economisch-Historisch Archief no. 16 (Leiden: Martinus Nijhoff, 1983); Wim Blockmans, 'The Economic Expansion of Holland and Zeeland in the Fourteenth-Sixteenth Centuries', in Erik Aerts, Brigitte Henau, Paul Janssens, and

Certainly by far the most important of the new overseas joint-stock trading companies, for the later sixteenth and early seventeenth centuries, was the Levant Company. Limitations of space do not permit any fair examination of its commercial activities, nor of those of the subsequent joint-stock companies, important though they are to the history of early-modern English entrepreneurship. But we should not fail to note some salient features of the Levant Company's history. As a far different counterpoint to the Eastland Company's sorry history in the Baltic, the Levant Company represents England's very first and remarkably successful entry into the still far more lucrative Mediterranean trade.<sup>104</sup> The circumstances that led to this English success, and the establishment of the Levant Company, were somewhat fortuitous: the Ottoman Turks' seizure of Cyprus in 1570-71, thereby gaining control of the Aegean Sea from Venice; and then, in October 1571, the crushing victory of the Venetian-led coalition of European fleets over the Turks at the Battle of Lepanto. That ended forever the European fear of Ottoman naval supremacy in the Mediterranean, and enabled the English to exploit European differences in dealing with the Turks. Note that the Levant Company was founded just ten years after the Battle of Lepanto. What the Turks wanted was a new European ally – one more reliable than the French had been. They also wanted a secure supply of guns, munitions, and above European textiles, but most especially fine English woollen broadcloths, to reduce their recent dependence on Venetian woollens (when the Turks were so often at war with Venice). What the English wanted was not just a general entry into Mediterranean trade, but more specifically a new and more propitious

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Raymond Van Uytven, eds., *Studia Historica Oeconomica: Liber Amicorum Herman Van der Wee* (Leuven, 1993), pp. 41-58; Michael North, *From the North Sea to the Baltic: Essays in Commercial, Monetary and Agrarian History, 1500 - 1800*, Variorum Collected Studies Series CS 548 (Aldershot: Ashgate Publishing, 1996); Bas J. P. van Bavel and Jan Luiten van Zanden, 'The Jump-Start of the Holland Economy during the Late-Medieval Crisis, c. 1350 - c. 1500', *The Economic History Review*, 2<sup>nd</sup> ser., 57:3 (August 2004), 503-32.

<sup>104</sup> Technically, the first successful English maritime venture was the arrival of the *Swallow* in the harbour of Livorno (Leghorn) on 23 June 1573; and Livorno would continue to be very important for English trade in the Mediterranean. See Gigliola Pagano de Divitiis, *Mercanti inglesi nell'Italia del Seicento: Navi, traffici, egemonie* (Venice: Marsilio Editore), 1990; republished as *English Merchants in Seventeenth-Century Italy*, trans. by Stephen Parkin, Cambridge Studies in Italian History and Culture (Cambridge: University Press, 1997), p. 5. See also Scott (1912), *Joint Stock Companies*, vol. II, pp. 83-88; George Cawston and A. H. Keane, *The Early Chartered Companies, A.D. 1296-1858* (London, 1896; reprinted New York, 1968), pp. 67-85.

market for their own woollens, in view of the serious difficulties still afflicting Antwerp and other potential northern markets for those clothes. English merchants also wanted a guaranteed access to the even more lucrative import trade in raw silk (Turkish and Persian) and Asian spices.

The brilliant entrepreneurial success of the Levant Company was due principally to two factors. The first was skilful diplomacy, and especially in negotiating better commercial relations and commercial services – and in supplying better quality textiles – than those offered by its European and especially Venetian competitors.<sup>105</sup> The second was much superior naval technology and naval tactics. By the mid-seventeenth century, the English were building far larger, far stronger oak-based carracks and galleons, which were also more heavily gunned than were those of any of their rivals in the Mediterranean basin. They proved to be largely invincible to both pirates and Muslim corsairs – which had for so long menaced the Mediterranean shipping lanes. While their freight rates were perhaps ten percent higher than those of their competitors, their insurance rates were far lower – and above all Levant Company galleons offered the virtual certainty of delivering their cargoes.<sup>106</sup>

In 1600, some leading entrepreneurs in the Levant Company had also been instrumental in the establishment of what ultimately became an even more important overseas joint-stock trading company: the East India Company. Its objective was to compete with the Dutch, in a desperate race to establish a direct sea link, via South Africa (the Cape route), with the Indian Ocean and East Indies spice trade, at a time when

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<sup>105</sup> See: John Munro, ‘South German Silver, European Textiles, and Venetian Trade with the Levant and Ottoman Empire, c. 1370 to c. 1720: A Non-Mercantilist Approach to the Balance of Payments Problem’, in Simonetta Cavaciocchi, ed., *Relazione economiche tra Europa e mondo islamico, secoli XIII - XVIII*, Atti delle “Settimana di Studi” e altri convegni, no. 38, Istituto Internazionale di Storia Economica “Francesco Datini” (Florence: Le Monnier, 2007), pp. 907-62. As Ralph Davis has commented, ‘when the cold gales of autumn blew from the uplands of Asia Minor and the Balkans, the prosperous Turk or Persian counted himself lucky to be wrapped in the thickest and heaviest of English woollens’. Ralph Davis, ‘England and the Mediterranean, 1570-1670’, in F.J. Fisher, ed., *Essays in the Economic and Social History of Tudor and Stuart England* (Cambridge: Cambridge University Press, 1961), pp. 117-26 (quotation on pp. 122-23).

<sup>106</sup> See Davis (1961), ‘England and the Mediterranean’, pp. 126-37; Ralph Davis, *English Overseas Trade, 1500 - 1700* (London, 1973), pp. 20-31; Ralph Davis, *The Rise of the English Shipping Industry in the Seventeenth and Eighteenth Centuries* (London, 1962), pp. 1-57, 228-56; Pagano di Divitiis (1990/1997), *English Merchants*, pp. 41-55, especially Table 2.1, p. 43.

warfare was disrupting the spice trades of the then two principal participants: Venice and Portugal. In the early seventeenth century, however, the English seemed destined to lose this competition, especially after the Dutch, in 1623 had forcibly evicted the English from Amboyna (modern-day Ambon), one of the key East Indies spice islands, in the Moluccas, thereby allowing the Dutch to gain virtual control of this region's trade. The Dutch victory was due to superior capitalization and superior organization, in its own joint-stock company, the *Vereenigde Oost-Indisch Compagnie* (United East India Co: VOC), and to its superior military power, with government support largely unavailable (especially over such vast distances) to the English East India Company. The East India Company directors then decided to 'sub-optimize' by focusing their commercial, political, and then military activities in gaining control of the Indian sub-continent, but were certainly not successful in doing so, nor in their Asian commerce, until at least the 1660s. But if the export of silver, the chief export of both companies to Asia, is a measure of relative success, the English exports had exceeded those of the Dutch by 1720.<sup>107</sup> Certainly by that time, both East India companies had proved successful in terminating forever the role of both the Venetians and the Portuguese in the Asian spice trades.<sup>108</sup>

Growing hostility in late Elizabethan and Stuart England to monopolies, in both domestic industry and overseas trade (since most demanded and enjoyed monopoly rights) – and a growing

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<sup>107</sup> In the decade 1710-20, the decennial mean exports of the English East India Company were 41,33.6 kilograms, compared to 37,108.1 kg by the Dutch Company. F.S. Gaastra, 'The Exports of Precious Metal from Europe to Asia by the Dutch East India Company, 1602-1795 A.D.', in John F. Richards, ed., *Precious Metals in the Medieval and Early Modern Worlds* (Durham, N.C., 1983), pp. 447-76; K. N. Chaudhuri, 'Treasure and Trade Balances: the East India Company's Export Trade, 1660-1720', *Economic History Review*, 2nd ser., 21:3 (Dec. 1968), Table 1, pp. 497-98.

<sup>108</sup> For the English East India Company, see: Scott (1912), *Joint Stock Companies*, vol. II, pp. 89-206; Cawston and Keane (1896), *The Early Chartered Companies*, pp. 86-153; K. N. Chaudhuri, *The English East India Company: the Study of an Early Joint Stock Company, 1600-1640* (London, 1965); K. N. Chaudhuri, *The Trading World of Asia and the English East India Company, 1669-1760* (Cambridge and New York: Cambridge University Press, 1978); Chaudhuri (1968), 'Treasure and Trade Balances', pp. 480-502; H.V. Bowen, Margarette Lincoln, and Nigel Rigby, eds., *The Worlds of the East India Company* (Woodbridge, Suffolk: The Boydell Press, 2002); H.V. Bowen, *The Business of Empire: the East India Company and Imperial Britain, 1756-1883* (Cambridge and New York: Cambridge University Press, 2006).

Mercantilist hostility as well to exports of ‘treasure’ (silver) -- hindered the creation of new joint-stock companies. Thus not until after the Civil War and Commonwealth era (1642-1660), with the Restoration under Charles II in 1660, were new and important joint-stock companies created, in particular: (1) The Royal African Company: in 1662, reorganized with a new charter in 1672; (2) The Hudson’s Bay Company, in 1670; (3) The Bank of England, in 1694; (4) The New East India Company: in 1698 (established, with a large loan to the government, as rival to the original East India Co, but absorbed by, merged into, the original company in 1709); and finally, (5) The South Sea Company, in 1711.<sup>109</sup>

Only from the 1660s did the joint-stock overseas trading companies prove truly successful in both altering the structure of English foreign trade and in establishing economically viable commercial-colonial empires for Great Britain. They did so, fundamentally, by shifting the emphases of their trade from spices, precious metals, and luxury silks into a new re-export trade in more mass-consumption oriented colonial products, which themselves came to be mass-produced: above all sugar, Asian cotton textiles (calicoes and muslins), tobacco, tea, coffee, codfish, lumber. That colonial re-export trade rose from just 4 percent of total export values in 1640 to 31 percent of total export values in 1700, thereby reducing the dependence on woollen cloth exports from 92 percent in 1640 to 48 percent in 1700;<sup>110</sup> and throughout the eighteenth century, the colonial re-export trades consistently accounted for about a third of total export values.<sup>111</sup> Ralph Davis called that transformation a ‘Commercial Revolution’, while Eric Hobsbawm called it ‘New Colonialism’, demonstrating that it was vastly more profitable and vastly more conducive to

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<sup>109</sup> Scott (1912), *Joint Stock Companies*, vol. I, pp. 263-421; vol. II, pp. 228-40; Cawston and Keene (1896/1968), *Early Chartered Companies*, pp. 154-243.

<sup>110</sup> Sources: F. J. Fisher, ‘London’s Export Trade in the Early Seventeenth Century’, *Economic History Review*, 2<sup>nd</sup> ser., 3:2 (1950), 151-61; Ralph Davis, ‘English Foreign Trade, 1660-1700’, *Economic History Review*, 2<sup>nd</sup> ser., 7:2 (1954), 150-66; Davis (1973), *English Overseas Trade*, Tables I-V, pp. 52-57; Clay (1984), *Economic Expansion*, vol. II, pp. 103-202, esp. Tables X, p. 125; XI-XV, pp. 142-46; XVI-XX, p. 155-60; XXI, p. 180.

<sup>111</sup> Statistics extracted or calculated from Brian. R. Mitchell and Phyllis Deane, *Abstract of British Historical Statistics* (Cambridge, 1962), pp. 274-337; and Peter Mathias, *The First Industrial Nation: An Economic History of Britain, 1700 - 1914*, 2nd revised edn. (London: Methuen and Co, 1983), pp. 87-88.

economic growth than was the former Old Colonialism (based, in his view, on spices and precious metals).<sup>112</sup> It is also, of course, known as the Age of Mercantilism whose significance for this topic may lie in the role that state-supported economic nationalism, with the twin goal of increasing national wealth and national power, fostered and fortified the rent-seeking goals of many English entrepreneurs, especially in commerce and finance.<sup>113</sup>

#### **IV. Limitations of the early-modern joint stock companies**

The joint-stock company was not, however, destined to become the predominant form of business enterprise, and certainly not the major vehicle for capital formation in mining and manufacturing in the Industrial Revolution itself. Its inherent weakness, at least for those joint-stock companies operating within the local domestic economy, was its legal status. For English law regarded joint-stock companies as nothing more than large partnerships (except in being exempt from the six-member rule). Under long-standing commercial law throughout western Europe, from Roman times, a simple partnership (*societas*, *compagnia*) was subject to unlimited liability for all its partners – and thus for all shareholders in unchartered joint stock companies. Typically, and usually, partners bore liability for losses in proportion to their capital investments in the firm; but in fact, under customary law, all were collectively and severally responsible for all of the debts, losses, and other liabilities of the firm. This ‘Sword of Damocles’, this prospect of unlimited debt, undoubtedly discouraged those who did not enjoy asymmetric information, with an intimate knowledge

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<sup>112</sup> Davis (1973), *Rise of the Atlantic Economies*, pp. 250-87; Davis (1973), *English Overseas Trade, 1500-1700*, pp. 26-40; Eric Hobsbawm, ‘The Crisis of the Seventeenth Century’, *Past & Present*, nos. 5 (May 1954), 33-53 & no. 6 (Nov. 1954), 44-65; reprinted in: Trevor Aston, ed., *Crisis in Europe, 1560-1660: Essays from Past and Present* (London, 1965), pp. 5-58, 97-112. See also Geoffrey Parker and L.M. Smith, eds., *The General Crisis of the Seventeenth Century* (London, 1978); Theodore K. Rabb, *The Struggle for Stability in Early Modern Europe* (Oxford, 1976), pp. 3 - 34; Jan de Vries, *The Economy of Europe in an Age of Crisis, 1600-1750* (Cambridge, 1976), pp. 1 - 29.

<sup>113</sup> Jacob Viner, ‘Power vs. Plenty as Objectives of Foreign Policy in the Seventeenth and Eighteenth Centuries,’ *World Politics*, 1 (1948), republished in Donald C. Coleman, ed., *Revisions in Mercantilism*, Debates in Economic History Series (London, 1969), pp. 61-91; Charles Wilson, ‘Treasure and Trade Balances: the Mercantilist Problem’, *Economic History Review*, 2nd ser., 2:2 (1949), 152-61; Charles Wilson, *Mercantilism*, Historical Association pamphlet No. 37 (London, 1958: reissued 1966).

of the joint-stock company's business, from buying shares in such companies.<sup>114</sup>

The joint-stock companies discussed previously, those in foreign trade and those that were the most important in the early-modern English economy, enjoyed a major benefit and advantage over most others: the possession of a charter of incorporation. Such charters were derived from the constitutions of medieval English guilds and civic corporations, which made them, as a *corpus*, a separate 'body' and legal entity that could sue and be sued in their own corporate name, without financially or otherwise legally obliging or involving in any way, the individual status or any liability on the part of its members. For a joint-stock corporation that meant in particular 'limited liability': i.e., that the liability of each individual shareholder was limited to the amount that he/she agreed to pay in buying the shares (usually on margin).

Curiously enough, the English never availed themselves of a compromise form of business organization that the French government (and then other European governments) had sanctioned from about 1670: the *société en commandite*. It provided complete 'limited liability' to all those shareholders (or 'silent partners') who took no active role in the operations of the company, reserving complete, unlimited liability only for those shareholders who did take an active entrepreneurial role in the firm's business activities. Of course, the whole issue of limited liability is really one of risk allocation: to the extent that shareholders, i.e., those with equity in the firm, are protected by limited liability from creditors (lenders, bond or debenture holders) who are subject to increased risk of loss in the event that those firms failed.<sup>115</sup>

The other significant limitation, and one that applied to virtually all joint-stock companies from the mid sixteenth to very late seventeenth century, was the absence of an organized and effective stock market; i.e., a secondary market in securities. For obviously most investors would have been reluctant to buy shares in a joint-stock company without the opportunity or prospects of recovering their capital investment by the re-sale of the shares to other parties. Indeed, one strong incentive to buy such shares was

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<sup>114</sup> See in general, Scott (1912), *Joint Stock Companies*, Vol. I, pp. 1-14; 150-65; 439-72.

<sup>115</sup> Colin Heywood, *The Development of the French Economy, 1750 - 1914* (Basingstoke: Macmillan, 1992); Roger Price, *An Economic History of Modern France, 1730-1914* (London, 1980).



to realize a capital gain through their subsequent sale, even if, of course, they also bore a risk of capital losses, in doing so. While the wealthier, more prominent, and influential businessmen did have some prospect of finding individual brokers to handle such secondary stock sales (and purchases, for those who wished to acquire new or more shares), most potential investors did not.

In 1695, however, England did gain its own London Stock Exchange (or Royal Exchange): from the now regularly scheduled meetings of stock brokers or ‘jobbers’ in (reputedly) the London coffee houses in or near Lombard street, and near the location of the new Bank of England (established 1694). By that time, England already possessed 137 joint-stock companies, for domestic and foreign enterprises; and the creation of the London Stock Exchange soon encouraged the formation of many more new, and generally unchartered and unincorporated, joint-stock companies.<sup>116</sup> That in turn eventually spawned a speculative boom, especially in the years from 1711, from the formation of the South Sea Company (with a charter), to the infamous South Sea Bubble of 1720-21 – a speculative era much akin to that of the 1920s.<sup>117</sup> That story is far too complex to discuss here. Suffice it to say that the South Sea Company was formed ostensibly to acquire a monopoly on British trade in the Pacific, a dubious proposition, since that trade was controlled by Spain – usually a very hostile enemy nation. But its real purpose was to take over all or most of the outstanding national debt (which had ballooned during the costly War of the Spanish Succession, from 1701 to 1714; that is, to acquire the national debt not then held by the Bank of England and the East India Companies. That amounted to £31,490,800 sterling, or 63.2 percent of the total permanent national debt. In essence, the Company proposed to buy up or exchange that debt, much of it short-term, for perpetual South Sea stock, paying 5 percent, and readily marketable on the London Stock Exchange.

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<sup>116</sup> Scott (1912), *Joint Stock Companies*, Vol. I, pp. 326-87; Ranald Michie, *The London Stock Exchange: a History* (Oxford and New York: Oxford University Press, 1999).

<sup>117</sup> For the following, and also for the complex, most detailed story, see Scott (1912), *Joint Stock Companies*, Vol. I, pp. 387-438; and Vol. III, pp. 287-360. See also Dickson (1967), *The Financial Revolution in England*, pp. 486-520; and Larry Neal, *The Rise of Financial Capitalism: International Capital Markets in the Age of Reason* (Cambridge and New York, 1990).

In the final stage of this remarkable enterprise, in 1720, when the Company had to raise new capital – i.e., in selling new stock issues – its directors unwisely sought to curb the competition from other joint-stock companies in the capital market by having Parliament enact the statute 6 George I cap. 18 – thereafter known as the ‘Bubble Act’ -- which forbade the sale of any shares, on the stock exchange by any joint-stock company that did not already possess a charter of incorporation, or that possessed a charter issued for some other purpose. In August, the South Sea Company sought to enforce the act by securing writs of *scire facias* against some unchartered companies and companies with dubious charters. The Company directors failed miserably to anticipate the consequences. As the stock market prices of the affected companies fell, and fell sharply, those who had bought stock on margin, with ‘call loans’ (i.e., payable on demand) and/or those who had used their stock as collateral for similar loans, received a demand from their creditors to pay the full amount owing, immediately. That meant the forced sale of not only the affected stocks, but also of ‘good stocks’, in order to raise sufficient funds to pay their creditors. It was the stock market equivalent of Gresham’s Law.

The obvious political consequence of the ensuing and most horrendous stock market crash was a Parliamentary inquiry. Amongst the major discoveries was indisputable evidence that South Sea Company officials had bribed government ministers, other Members of Parliament, and royal officials. According to many historians, so traumatic were both the financial losses from the ‘Bubble’ and the stench of corruption that henceforth the government and Parliament interpreted the ‘Bubble Act’ in highly restrictive terms. In particular, Parliament made incorporation extremely difficult: it now required, in all instances, a costly private Act of Parliament, which in turn generally required that all or most of the subscribed capital be placed on deposit with the Bank of England until that act was formally approved. That meant, of course, that very few if any small companies, especially those just starting operations, could afford to pay for such acts and acquire the required charters of incorporation.

In the 105 years of the ‘Bubble’ era that followed, until its repeal in 1825, the only notable

exceptions, the only joint-stock corporations that did acquire such charters, were the canal companies in the 1780s and 1790s. Why they were exceptions is obvious: they clearly served the general public good, when such transportation improvements were desperately needed for the expanding market of the Industrial Revolution; they obviously could not raise the required capitals except by joint-stock financing; and, in any event, the authorization for the creation of a canal company, with monopoly rights and with necessary public expropriations (Eminent Domain), which also required private Acts of Parliament.

The chief response to the view that the Bubble Act impeded capital formation in British industry, and thus implicitly impeded industrialization itself, is the obvious fact that the Industrial Revolution nevertheless did take place during this very era of the Bubble Restriction. Phyllis Deane, and others argue in particular that neither the technological needs of the Industrial Revolution nor the scale of enterprise, in turn a function of commercial scales, required large initial amounts of capital, citing in particular the growth of the cotton industry.<sup>118</sup> But when one considers the vastly larger scale required for the new coke-fuelled and steam-powered iron industry – in mining, smelting, and refining – one may contend that had chartered and incorporated joint-stock financing been available, without the legal and financial encumbrances, just outlined, the British Industrial Revolution might have progressed faster and earlier, with better financed and larger scale industrial enterprises. At the same time, we should also consider, in terms of the previously discussed Weber-Tawney thesis, that the virtual absence of joint-stock financing made entrepreneurial profit reinvestment (or profit retention) all the more important for industrial capital formation during that early, pre-1825 phase, of the Industrial Revolution.

### **Some conclusions on entrepreneurship in early modern England**

As was stressed in the introduction to this current study, Richard Tawney's lifelong pursuit of the origins of a distinctly new and 'modern' form of capitalism – so different from its medieval forms –

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<sup>118</sup> Phyllis Deane, *The First Industrial Revolution* (London, 1965), pp. 203-06. See also Thomas S. Ashton, *An Economic History of England: the 18<sup>th</sup> Century* (London: Methuen, 1955), pp. 118-21.

implicitly involved seeking out the origins of modern capitalist entrepreneurship, and thus the origins of the modern Industrial Revolution, i.e., from the second half of the eighteenth century. The thesis of this study is that those origins are to be found, not in Tawney's century (1540-1640), but rather in the ensuing century, 1640-1740, i.e., from the Civil War era, and the era of Puritan ascendancy, to the eve of the Industrial Revolution. The corollary and ancillary thesis is that such new forms of entrepreneurship, if not entirely explaining how the modern Industrial Revolution came about, certainly constituted the most vital force in producing that Industrial Revolution – and in its true homeland of Great Britain (England, Scotland, Wales). While there are still some economic historians who dispute the reality of the Industrial Revolution, pointing out the continued low levels of economic growth until, say, the 1830s or 1840s,<sup>119</sup> the very idea that there had been no Industrial Revolution is hardly worthy of serious debate. For the ensuing and completely unprecedented rates of sustained aggregate economic growth, demographic growth, and growth in per capita incomes, from the 1840s until World War I, could not have taken place without a prior industrial revolution: i.e., with a truly revolutionary transformation of virtually all sectors of the economy, with backward and forward linkages to industry. How could England and Wales have more than tripled their populations in the century from 1811 to 1991 – from 10.563 million to 36.136 million – while not only fully feeding that far higher population (from imports) but also experiencing a 2.76 fold rise in the real wage index (for building craftsmen, from 49 to 135), and a 43.4 decline in mortality rates (from 25.6/1000 in 1811 to 14.5/1000 in 1911. That truly marks a fundamental watershed in human history, for never before had all such forms of economic growth ever been so combined and sustained (providing a virtual escape from the 'Malthusian Trap').<sup>120</sup>

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<sup>119</sup> See n. 48 above.

<sup>120</sup> Scotland is not included because of inadequate data to make these comparisons. See Phelps Brown and Hopkins (1956), 'Seven Centuries of the Prices of Consumables', pp. 30-31; and Wrigley, Davies, Oeppen, and Schofield (1997), *English Population History*, pp. 613-16. See also John Komlos, 'The Industrial Revolution as the Escape from the Malthusian Trap', *The Journal of European Economic History*, 29:2-3 (Fall - Winter 2000), 307-31; Thomas (1985/1986), 'Escaping from Constraints: The Industrial Revolution in a Malthusian Context' pp. 729-54.

If, surely, it is impossible to refute or otherwise negate the significant roles that entrepreneurs did play, not only in creating and fashioning that Industrial Revolution, but also in laying its foundations in that crucial century of 1640 - 1740, then we must conclude that early-modern England (then Great Britain) had been blessed with a very substantial number of practically innovative, highly productive and successful, profit-maximizing entrepreneurs, arguably more so than any other region -- except possibly for Holland and the northern American colonies (which were then virtually an extension of England). As documented in some detail in this study, the very considerable number of both institutional and technological innovations that did take place this 'crucial' century -- not just in industry, but also in agriculture, overseas trade, and finance -- illustrate how successful British entrepreneurs were in implementing and ensuring their success. Who would doubt their vital importance for the ensuing Industrial Revolution, and for Britain's economic growth, up to World War I?

Of course, we must be careful to distinguish between 'inventions', which may or may not have any real impact on economic growth, and 'innovations' that so often do have such an impact. We must also recognize that many entrepreneurs, in a market economy, proved to be failures, in that sense -- and one thinks of those involved in trying but failing to create and use coke fuels, before Abraham Darby. Most economic historians are instinctively inclined to study successes rather than failures; and also to do so without having the relevant data to measure those successes, except by general indications of long-term results. We do not, therefore, usually possess any mechanism to measure the actual financial rewards that accrued to the individual entrepreneurs who initiated the productive and profitable innovations. Furthermore, in view of the prior discussion of both the 'Protestant Ethic' and of institutional restrictions (the Bubble Act) their financial rewards may have been chiefly in the growth of their enterprises (including amalgamations, as the 'winners' took over the assets of the 'losers').

We should also qualify the term 'profit-maximizing'. It should be taken only in the context of the ethos of so many of these entrepreneurs, for reasons examined in that initial and core section of this

study: on the relationship between religion (Dissenters), social and political institutions, and entrepreneurship in that century 1640 - 1740. In particular, this study has focused on those political and institutional changes that flowed from, or at least ensued from, the Glorious Revolution of 1688, including in particular, the Financial Revolution, culminating with ‘Pelham’s Conversion’ of 1749-57. That also included the remarkable success of so many new joint-stock companies in this era, though we must also note that for many their successes dated from the earlier, post-Restoration period (i.e., from 1660). As argued earlier in that section of this study, those political, social, and institutional changes were a very major factor in promoting and ensuring the economic success of so many entrepreneurs.

That brings us to the important issue of the social status of entrepreneurs in early-modern, or post-1640 England. This study has, quite obviously, solidly endorsed the Weber-Tawney thesis, in particular the view that, if entrepreneurial success came to be viewed -- certainly by the mid-seventeenth century (and just as certainly not in the mid-sixteenth century) — as a positive sign of ‘election’, i.e., to enjoy Paradise with God in the hereafter, then that change in both religious and social *mentalité* itself proved to be a socio-economic revolution in making highly individualistic and intensely competitive capitalist entrepreneurship, successful entrepreneurship, not just socially acceptable, but socially meritorious.

That was in stark contrast to prevalent views of medieval society that had stressed the overall primacy of the entire community — especially urban communities – over the individual, and that so often viewed business success as a threat to social harmony, while also reflecting common religious views that scorned not just usury but profit-seeking avarice.<sup>121</sup> A very common belief in medieval society (indeed to the early seventeenth century) was the oft-quoted biblical statement of Jesus (Matthew 19:24): that ‘it is easier for a camel to go through the eye of a needle than for a rich man to enter into the kingdom of God’. So many in medieval society had assumed that those who did become rich had done so only at the direct expense of the rest of society — and not from a creative, innovative, productive entrepreneurship that brought

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<sup>121</sup> See Tawney (1926), *Religion and the Rise of Capitalism*, and other studies discussed in pp. And nn. 9-30, above.

about economic growth, and rising real incomes, to the benefit of most of society.

To be sure, as stressed earlier, Calvinism (or Protestantism in general) in its first century, to the 1640s, was as hostile to usury, and perhaps to capitalism in general, as the Catholics were and had been. But from the Civil War era such hostilities virtually vanished (in Holland as well as in England), to permit and promote a revolutionary change in general social attitudes about competitive capitalist entrepreneurship and to business enterprises in general.

At the same time, the peculiar success of so many (but not all, obviously) English Dissenters, and Scottish Presbyterians, in the conjoined worlds of science and business, during the later seventeenth and eighteenth centuries, also reflected the impact of the post-Restoration religious, political, and social restrictions imposed on them by Parliament's Corporation and Test Acts. For those restrictions were only partially removed by the 1689 Toleration Act, following the Glorious Revolution. As argued earlier, however, the ensuing state of quasi-toleration, ensuring a distinctive minority status for Dissenters, may, if only in part, help to explain their entrepreneurial successes. A specifically important attribute of that legislated minority status were the Academies, which they were thus forced to establish, and which also fostered in a very material sense those entrepreneurial successes. In other words, some institutional limitations that appear to have been harmful may in fact prove to have been the key spurs to successful entrepreneurial innovations and, in more general terms, to economic growth itself, in early-modern England..

There remains, finally, one presumed institutional impediment to business organization, and thus possibly to entrepreneurial success to be considered: the Bubble Act, enduring from 1720 to 1825; or more correctly the ways in which the two houses of Parliament interpreted that act to prevent the formation of joint-stock companies, without very costly charters of incorporation, during this era. Nevertheless, as most historians quickly point out, the Industrial Revolution did take place in the second half of this period. Whether or not business enterprises and their leading entrepreneurs would have enjoyed a very different and perhaps more profitable existence in this era, without the Bubble Act, is an exercise in counter-factual

economic history that does not now seem worthwhile exploring.



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**Table 1.** **Price Relatives for Fuels and Components of  
the Phelps Brown and Hopkins 'Basket of Consumables' (Revised Version)  
1451-60 to 1781-90, in decennial means  
Base (1) 1451 - 1475 = 100      Base (2) 1581-90 = 100**

Decade	Charcoal	Charcoal	Coal	Coal	Timber	Timber	Phelps	Phelps
	Index 1451-75 = 100	Index 1581-90 = 100	Index 1451-75 = 100	Index 1581-90 = 100	Index 1451-75 = 100	Index 1581-90 = 100	Brown & Hopkins Baset of Consumables Index 1451-75 = 100	Brown & Hopkins Baset of Consumables Index 1581-90 = 100
							112.801 d. sterling	
<b>1451-60</b>	101.901	42.582			109.451	32.174	99.855	29.353
<b>1461-70</b>	88.482	36.975			94.712	27.841	102.109	30.016
<b>1471-80</b>	99.226	41.464			94.155	27.678	94.370	27.741
<b>1481-90</b>	87.791	36.686			108.235	31.817	111.326	32.725
<b>1491-1500</b>	81.152	33.912			92.332	27.142	100.542	29.555
<b>1501-10</b>	88.261	36.882			86.254	25.355	105.719	31.077
<b>1511-20</b>	93.910	39.243			99.291	29.187	114.921	33.782
<b>1521-30</b>	95.125	39.751			102.816	30.224	153.430	45.102
<b>1531-40</b>	90.205	37.695			97.954	28.794	158.278	46.527
<b>1541-50</b>	106.839	44.646			120.644	35.464	204.838	60.214
<b>1551-60</b>	171.315	71.589			181.625	53.390	296.195	87.069
<b>1561-70</b>	187.847	78.498			179.498	52.765	286.075	84.094
<b>1571-80</b>	208.752	87.233			216.066	63.514	313.903	92.275

Decade	Charcoal	Charcoal	Coal	Coal	Timber	Timber	Phelps	Phelps
	Index	Index	Index	Index	Index	Index	Brown & Hopkins	Brown & Hopkins
	1451-75	1581-90	1451-75	1581-90	1451-75	1581-90	Baset of	Baset of
	= 100	= 100	= 100	= 100	= 100	= 100	Consumables	Consumables
							Index	Index
							1451-75	1581-90
							= 100	= 100
							112.801	
							d. sterling	
<b>1581-90</b>	239.303	100.000	274.605	100.000	248.987	100.000	340.184	100.000
<b>1591-1600</b>	254.108	106.186	260.707	94.939	295.583	118.714	430.784	126.632
<b>1601-10</b>	280.911	117.387	288.045	104.894	349.473	140.358	436.652	128.357
<b>1611-20</b>	329.714	137.781	288.171	104.940	408.732	164.158	477.818	140.459
<b>1621-30</b>	325.204	135.896	316.146	115.128	455.835	183.076	488.775	143.680
<b>1631-40</b>	332.175	138.809	354.618	129.138	494.834	198.739	558.621	164.211
<b>1641-50</b>	433.398	181.108	530.691	193.256	528.363	212.205	585.240	172.036
<b>1651-60</b>	539.616	225.495	473.712	172.507			571.151	167.895
<b>1661-70</b>	607.687	253.940	454.453	165.493			567.490	166.819
<b>1671-80</b>	593.218	247.894	502.520	182.997			555.113	163.180
<b>1681-90</b>	572.798	239.360	400.096	145.699			501.543	147.433
<b>1691-1700</b>	572.030	239.040	488.295	177.817			574.244	168.804
<b>1701-10</b>	685.289	286.368	535.404	194.973			603.321	177.351
<b>1711-20</b>	727.951	304.196	503.508	183.357			646.880	190.156
<b>1721-30</b>	727.951	304.196	486.866	177.297			604.489	177.695
<b>1731-40</b>	729.749	304.947	516.680	188.154			557.411	163.856
<b>1741-50</b>	757.913	316.716	545.668	198.710			593.490	174.461
<b>1751-60</b>	757.913	316.716	593.049	215.964			633.596	186.251
<b>1761-70</b>	794.754	332.111	604.946	220.297			710.712	208.92
<b>1771-80</b>	794.754	332.111	656.900	239.217			806.887	237.191
<b>1781-90</b>	794.754	332.111	669.944	243.967			838.616	246.518

Decade	Charcoal	Charcoal	Coal	Coal	Timber	Timber	Phelps Brown & Hopkins Baset of Consumables	Phelps Brown & Hopkins Baset of Consumables
	Index	Index	Index	Index	Index	Index	Index	Index
	1451-75 = 100	1581-90 = 100	1451-75 = 100	1581-90 = 100	1451-75 = 100	1581-90 = 100	1451-75 = 100	1581-90 = 100
							112.801 d. sterling	
<b>coal</b>								Cambridge coal: spliced to combined charcoal index over 1586-1635 multiplier = 20.15607
<b>coal</b>								Westminster coal: spliced to combined charcoal index over 1586-1635 multiplier = 17.3983

### Sources:

The Phelps Brown Papers Collection, Archives of the British Library of Political and Economic Science (LSE Archives).

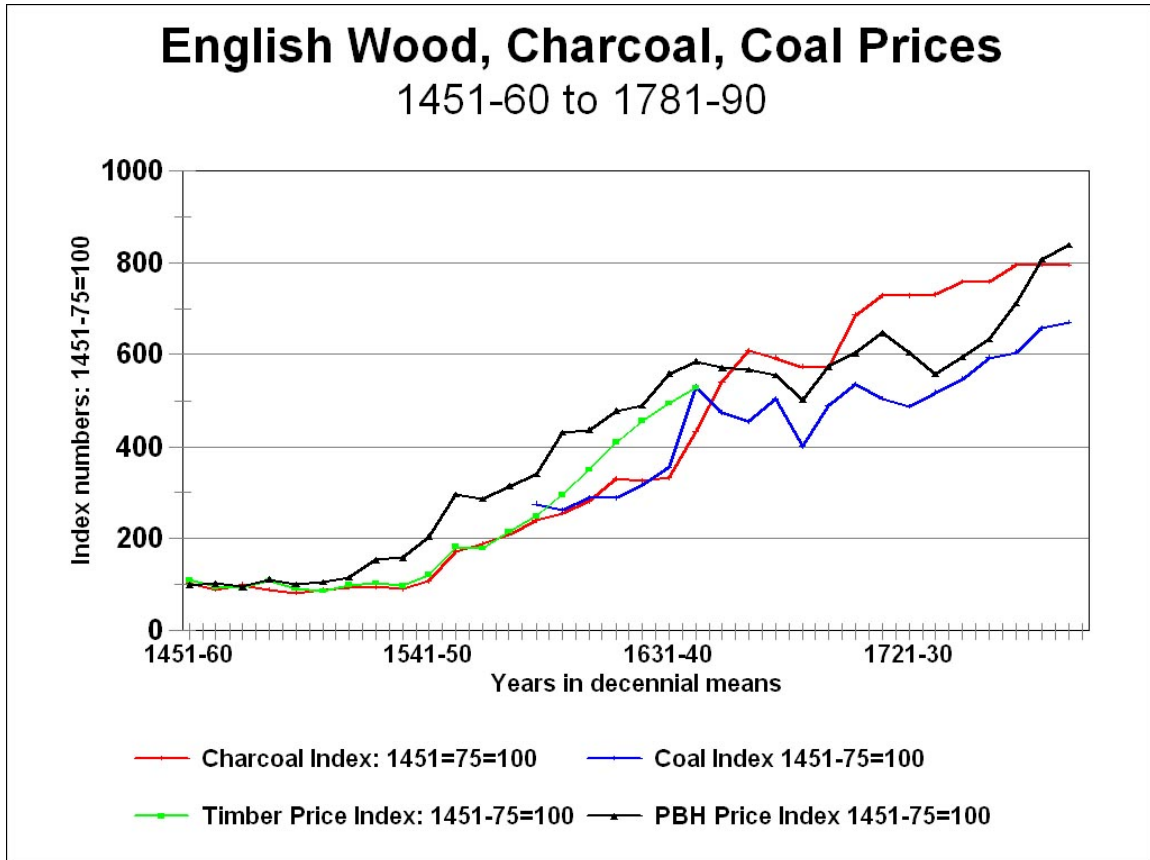
The timber prices are from Cambridge alone, taken from Peter Bowden, 'Agricultural Prices, Farm Profits, and Rents', Joan Thirsk, ed., *The Agrarian History of England and Wales*, Vol. IV: 1500 - 1640 (Cambridge: Cambridge University Press), Table VI, pp. 846-850. I have converted his original base, 1450-99= 100 (7.99s for 100 faggots) to the PB&H base of 1451-75.

Figure 1

**Price Relatives for Fuels (Wood, Charcoal and Coal) and  
the Phelps Brown and Hopkins 'Basket of Consumables'  
(Revised Version)**

1451-60 to 1781-90, in decennial means

Base : 1451 - 1475 = 100



Sources:

The Phelps Brown Papers Collection, Archives of the British Library of Political and Economic Science (LSE Archives): for charcoal and coal prices; and for the Phelps Brown & Hopkins Composite Price Index (base: 1451-75=100)

Peter Bowden, 'Agricultural Prices, Farm Profits, and Rents', in Joan Thirsk, ed., *The Agrarian History of England and Wales*, Vol. IV: 1500 - 1640 (Cambridge: Cambridge University Press, 1967), Table VI, pp. 846-850.

I have converted his original base, 1450-99= 100 (7.99s for 100 faggots) to the PBH base of 1451-75.