Game of Thrones or Game of Class Struggle? Revisiting the Demise of Feudalism and the Dobb-Sweezy Debate

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Abstract

In 1947, the Marxist economist Maurice Dobb published a book that attempted to outline and explain how the feudalistic economic system of medieval times gave way to capitalism. Dobb's *Studies in the Development of Capitalism* (1947) started a debate among economists and historians over the following decades that has continued until this day. One of his most prominent and earliest critics was Paul M. Sweezy who, although he commended Dobb on raising the question of why feudalism gave way to capitalism, disagreed with Dobb's conclusions on why the transition from feudalism to capitalism occurred. In general, Dobb thought that feudalism went into decline and was replaced by capitalism because of endogenous causes rooted in the class struggles between serfs and noblemen. Sweezy and others, on the other hand, thought that the factors which led to the decline of feudalism and rise of capitalism were exogenous, and these factors included the development and growth of international trade, production for markets and money, the growth and importance of cities, and the need for European monarchies to finance their wars and overseas empires. Other economists and historians, both mainstream and Marxian, also joined the debate, and a long list of articles and books have been generated on the "transition debate" since the late 1940s. In doing research for this paper, no statistical work on the Dobb-Sweezy debate and its competing hypotheses was found, and so this paper attempts to do some empirical testing of these hypotheses using data from England from the middle ages up to the late nineteenth century. The findings of this note are informative in trying to better understand the transition and provide some food for thought on how capitalism may change in the future.

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Introduction

Often using the concept and methodology of "historical materialism," Marxian economists and historians have attempted to explain the evolution of human society and its economic system from that of hunter-gatherers in pre-history; to one of slavery in antiquity; to feudalism in the middle ages; and to capitalism in current times (Marx and Engels 1974 (1845)). Central to historical materialism is the idea that humanity's material circumstances, not the philosophy of idealism, shape its existence and that a society's dominant mode of production reflects its material circumstances (Engels 1935 (1880), Marx and Engels 1974 (1845)). As the Cold War between East and West began to heat up after the second world war, a book by the British Marxist economist Maurice Dobb (1947) attempted to address the primary causes of the decline of feudalism and the rise of capitalism. This was considered a timely topic given the struggles between Soviet style socialism and western capitalism going on at that time, and Dobb was especially interested in looking for lessons from the transition from feudalism to capitalism and how these could possibly inform one about a possible transition from capitalism to socialism.[1]

In brief, Dobb's *Studies in the Development of Capitalism* (1947) generally concluded that most of the factors that caused the eventual fall of feudalism were endogenous to the feudalistic system. According to Dobb, the contradictions of a feudalistic economic system were mostly to be found in the class struggles between a land-owning and wealthy aristocracy and their extremely exploited and repressed serfs. Class struggle is a central concept to Marxian analysis. As serfs began rising up against their feudal lords and tried to gain independence in their production of agricultural goods, there also began a crisis in the mode of production, which was the "prime mover' in the decline of capitalism. Serfs began to tire of having to pay more and more in taxes to support wars of conquest and lavish aristocratic spending and also began to resent greater and greater pressure to produce more and more agricultural output with outdated technology and little incentive for personal reward. They also noticed how some of

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[1] In this debate over the demise of feudalism there are probably far too many participants to list or mention. This paper attempts to discuss the major participants within the Marxist school of thought and to summarize their general contributions without any slight to any scholar possibly overlooked.

their counterparts living in the city had prospered more than them by working as laborers or in crafts and guilds.[2] Hence, as the middle ages proceeded, serfs began to push back against their lords in various rebellions and in attempts to flee to cities, and these class tensions especially became more prominent in the 14th century thanks to population declines due to the Black Death (which put even greater pressure on the serfs and manors yet allowed some serfs to earn money outside of their manors) and increasing taxes.[3] After a long struggle in which the serfs and their descendants began to win many rights as well as to develop their own agribusinesses in rural areas as well as shops and manufactures in towns and cities did capitalism become the prevalent form of the economic system in England and in other parts of Europe in the late 1600s.

Others who would later generally concur with Dobb to one degree or another on the downfall of feudalism being due primarily to the major endogenous factor of a crisis in the mode of production were Rodney Hilton (1976a (1953), 1976b (1952)), Kohachiro Takahashi (1976 (1952)), and Eric Hobsbawm (1976 (1962)). Hobsbawm (1976 (1962)) is mostly credited with writing about how uneven development caused capitalism to develop in Western Europe, especially England, while serfdom and feudalism continued in other parts of the globe (Epstein 2007, Heller 2011). Later, the historian Brenner (1976, 1985) would argue in a somewhat parallel fashion to Dobb that the conflict between serf and lord gave rise to the entrepreneurial peasant farmer who would innovate in order to increase production and earn more money. This, along with the peasant farmer paying for rent with money would give rise to the capitalist peasant farmer who would go on to usurp the feudalistic system (Heller 2011). Brenner also downplayed the roles of increasing trade, population growth and farm production constraints (the "neo-Malthusian" problem), and the growth of towns as factors causing capitalism's downfall. Brenner's ideas would later generate more debate which would become known as the "Brenner Debate" (Aston and Philpin 1985, Heller 2011). The mainstream economists North and Thomas (1971, 1973) also noted the

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[2] Dobb, however, did not think that the growth and proliferation of cities directly caused a decline in feudalism.
[3] Lispon (1959) notes that after the Black Death had decreased England's population substantially, many lords tried to repress the wages paid to laborers through higher taxation or creating laws limiting pay.

rise of increasing peasant farmer output but credited it to property rights gained by the farmers over time and to their need to address the neo-Malthusian problem of increasing population with less and less arable land to develop as the medieval period continued.[4]

Paul M. Sweezy, a US economist and founder of the socialist publication *Monthly Review,* was the first major critic of Dobb's book, although he commended Dobb for trying to understand how capitalism arose from feudalism (Sweezy 1976 (1950)). For Sweezy, in general, the prime mover behind the demise of feudalism was the growth of overseas trade thanks to the Silk Road to China being closed in the 15th Century by the Ottoman Empire and the development of large mercantile sailing fleets by rival European powers (Sweezy 1976 (1950), Heller 2011). One could argue that the growth of these fleets paralleled the ascendancy of strong central monarchies in these nations, which in turn fostered a rivalry among the monarchs, or some type of a "game of thrones" (Heller 2011). Also, the production of goods changed from production for subsistence and for payment of land rent to lords to one of a production system for markets, whether the markets were foreign or domestic. Currency and tax systems would

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[4] Many mainstream history textbooks over the last few decades have primarily focused on some type of Malthusian scenario when it comes to explaining the economic stagnation of the late medieval period by focusing on population growth slowly outpacing agricultural production. This stagnation in turn may have caused more wars of conquest and financial difficulties for the aristocracies of different kingdoms. See, for example, Strayer, Gatzke, and Harbison (1974). Clark (2006) finds some merit to this argument, although efficiency increases in production and higher standards of living during periods of low population numbers do not always appear to coincide in the data he examines. Meanwhile, Broadberry, Campbell, Klein, Overton, and Van Leeuwen (2015) argue that "weak" Malthusian conditions existed during medieval Britain (sexual restraint mitigated strong Malthusian effects on population), and there were "Smithian" effects (in the spirit of Adam Smith) that started to improve the living conditions of the average person toward the end of the middle ages through greater specialization and efficiency in land usage and government investment in public infrastructure. Smithian effects often existed during some earlier centuries of the middle ages but were often set back by foreign competition and high international trade transaction costs hurting some infant and growing industries and markets. They also claim that there was an overemphasis on agricultural production during most of the middle ages in England, and that as wages rose, instead of working more, people decided to take more leisure instead (pages 266-278). For these reasons, English growth rates were anemic up to around the 16th Century. Lastly, some have written that a "Little Ice Age" existed from 1300 to 1850 in Europe and Northern America in which average temperatures and crop production fell (Fagan 2000, Blom 2019). These crop failures in turn supposedly triggered repression by feudal nobility who wanted more from their serfs in order to make up for lost production and triggered an increase in overseas trade as a way to make up for lost food production. These factors are also blamed for the demise of feudalism. This time period roughly corresponds to the entire time period considered and data used in this paper, which makes modeling this effect difficult. However, if correct, the presence of a little ice age would explain peasant uprisings in reaction to increasing pressure to produce more food and the impetus to engage in greater amounts of foreign trade/exploration to make up for lost agricultural production.

develop concomitantly with markets. Additionally, the growth of urban population centers was another key factor in that towns and cities, especially those with seaports, facilitated the exchange of goods with other lands. Cities were unfettered by feudal rule, serfdom, and the stagnant innovation that existed in the manors of rural areas. Thanks to international trade, cities would see the rise of producers and manufacturers, distributors, and retailers which would grow in size over time. These were essentially the same arguments made by Engels (1957) who also noted the importance of cities and foreign trade in the demise of feudalism. Finally, Sweezy, as well as his friend and collaborator on other projects, Paul A. Baran (1953) saw the feudalistic system as one that was basically static and did not have much change in output per capita and standards of living year in and year out. They did not consider the feudalistic system dynamic or growth oriented, although some have noted that the medieval period had periods of innovation, but these did not last long (Snooks 1993). Overseas trade, markets for exchange[5], gains in output, and the corresponding growth in cities were exogenous factors that would press upon and eventually bring down feudalism according to Sweezy.

Sweezy cited and relied upon the work of the Belgian historian Henri Pirenne whose *Medieval Cities: Their Origins and the Revival of Trade* (1956 (1925)) basically claimed that capitalism originated in late medieval cities thanks to international trade and the settlement of many wealthy traders and merchants in western European cities. Along similar lines, Nell (1967), like Engels (1957) put forth the idea that feudalism gave way to capitalism thanks to a contest won by urban industrialists against their rivals, noblemen and merchants. Sweezy also believed that Dobb had confused feudalism and serfdom. Serfdom, according to Sweezy, could exist without feudalism, and continued to do so in several regions after capitalism had become dominant in Western Europe. In general agreement with Sweezy, other scholars would point to cities and/or foreign trade as keys to the development of capitalism over feudalism. Wallerstein (1974) would later write that capitalism would mostly begin to flourish in

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[5] Bateman (2011) has conducted research to show that markets evolved and developed unevenly and with many successes yet failures during the late medieval period. Nonetheless, the prevalence of markets is still considered a key distinction between feudalistic and capitalistic times.

Western Europe thanks to the development of world trade and the beginnings of an overseas expansion and an exploitative relationship that Europe had with the rest of the world. Wallerstein (1974) and Anderson (2013) did believe that class struggles and a lack of arable land in Europe did spur innovation in agriculture which hurt the feudalistic system, yet they thought world trade was a greater factor in the development of capitalist Europe. Similarly, Heller (2011) would emphasize the rise of strong national governments, colonialism and foreign conquest along with greater foreign trade as a key to the development of capitalism. Finally, Mielants (2007) came to the conclusion that cities and their growing political and economic power were the greatest force in bringing down feudalism.[6]

Other exogenous causes mentioned regarding the rise of capitalism over feudalism revolve around the topics of religion and/or government. One classic cause has been known as the "Protestant work ethic", a view expounded by the sociologist Max Weber (1958 (1905)). In fact, Weber's writings pre-date the Dobb-Sweezy debate, yet his ideas were still popular around the time the debate started. In general, Weber argued that the adoption of Protestant Churches' (especially those of Calvinists and Puritans) beliefs in Europe over Roman Catholic beliefs encouraged the practices of enterprise, productiveness, and thriftiness. The historian R. H. Tawney also argued that there existed strong connections between Protestantism and capitalism. By teaching that spiritual redemption and salvation can be found through hard work and using worldly assets in a more productive way so as to glorify God, Protestantism instilled stronger work habits and a desire to innovate among a populace which had only known the steady state economy of feudalism and Catholic Church teachings which had focused too much on the afterlife and not worldly affairs.[7]

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[6] Rigby (2004) summarizes and analyzes the various Marxist interpretations (including those of Marx and Engels) of medieval times and the rise of capitalism over feudalism and concludes that various Marxian analyses mostly differ according to whether feudalism's decline was due to changes in the dominant mode of production (an agricultural revolution) or due to changes in class relations (e.g., the rise of independent peasant farmers).

[7] Tawney (1962) noted that it was Puritanism that had a large role in encouraging the elimination of any prohibitions against charging for interest on loans. Marx and Engel (1974), however, believed that the economic system of capitalism influenced religion to change rather than religion influencing the economic system to change.

The formation of nation-states and strong central governments over the lord and manor system of feudalism have also been noted as a cause in the rise of capitalism in that a strong, central monarchy (government) made possible the rise of foreign trade and conquest; a common, national currency system; the end of wars among rival lords and noblemen within nations over land and territory; the rise of property rights and enforceable contracts; and the growth and development of important infrastructure such as seaports and major roads (Heller 2011, Anderson 2013). This view has often been called "political Marxism" because it emphasizes the strong role of government in bringing about the ascendancy of capitalism in Western Europe (Heller 2011). Engels (1957) has written that a strong monarchy was needed to bring order to a political system that was fragmented and dysfunctional due to so many rivalries among noblemen who were sporadically at war with one another regardless of whether their monarch was fighting a foreign power. Omrod (1999) and O'Brien and Hunt (1999) note the rise of indirect taxation, increasing tax revenues, and national debt as signs of Western European central governments growing in strength and using the proceeds to fight wars against rival monarchs (again, a "game of thrones") and to pursue colonialism. Kings and queens could also avoid using the knights who fought for nobles and barons and instead could raise their own armies loyal to them. They also note that as markets develop, indirect taxation becomes more and more important as way of financing government expenditures and debt. Finally, Marx (1990) writes in Chapter 31, page 919, Volume 1 of *Capital*, "The national debt, i.e., the alienation of the state—whether that states is despotic, constitutional, or republican—marked the capitalist era with its stamp. The only part of the so-called national wealth that actually enters into the collective possession of a modern nation is – the national debt."

In what they call an approach following the thoughts of the philosopher Louis Althusser, Resnick and Wolff (1979) argue that the endogenous class conflicts of capitalism (between serfs and lords as well as among the nobility and church leaders) spawned events and institutions that would later become exogenous factors that would lead to feudalism's decline and capitalism's rise. They cite the extreme exploitation of serfs as helping to trigger their migration to towns and cities, which in turn lead to the growth of urban areas, and the growth of petty producers. They also note the nobility's desire for more

and more luxury and exotic goods, which in turn gave rise to greater foreign trade, more markets of exchange, and more materials for petty producers and merchants. The proliferation of cities, petty producers, markets, and foreign trade, in turn, came back against the feudalistic system by giving rise to a mostly urban, independent economic system of producers, merchants, and markets that would eventually supersede the manorial nobility.

This paper proceeds as follow. The next section covers the methods of analysis used in the paper by explaining the variables analyzed and the models developed. Then an outline of the results of the statistical analysis is given, which is then followed by a conclusion section which discusses which side, if either, of the debate had greater merits or arguments and what if any lessons can be learned regarding the future of capitalism.

(Insert Figures 1-3 and Table 1 around here)

Methods

Unless otherwise noted, this paper mostly uses data from the book *British Economic Growth, 1270-1870* (BEG) by Broadberry, Campbell, Klein, Overton, and Van Leeuwen (2015) with a focus on England.[8] This book uses statistical estimates of medieval English data through different records that existed during the time period examined and is probably one of the most if not the most thorough and comprehensive compendium of medieval data that was found in doing research for this paper. Different variables, especially those that indicated some degree of collinearity among them (variance inflation factors >= 5.0), were combined into two different indexes: Dobb Arguments (endogenous factors of feudalism's decline) and Sweezy Arguments (exogenous factors of feudalism's decline).

The Dobb Arguments uses principal components analysis (PCA) to form an index of variables that would support Dobb's and similar reasons advocated by others for the decline of feudalism. These variables are listed below.

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[8] The tables and figures of data are in spreadsheet form at the site https://www.cambridge.org/us/academic/subjects/history/economic-history/british-economic-growth-12701870?format=PB (last accessed on October 16, 2019).

Dobb Arguments Variables:

1. An agricultural Output Index, 1270-1870 with a base year of 1700 (adapted from BEG, Figure 3.04: Total arable, livestock and agricultural output, 1270-1870 (log scale, 1700 = 100), page 114). Dobb and those mostly sympathetic to his arguments to one degree or another believed that one of the factors leading to the demise of feudalism was changes in real agricultural output over time. Whether one emphasizes the class struggle between serfs and masters over the proceeds of such output wherein serfs tried to gain the upper hand on their lords through producing more and selling to the market; or whether one emphasizes that certain serfs gained the acquisition of property rights and a greater share of their output and earnings through entrepreneurial efforts, an increase in agricultural output is hypothesized to correspond to increases in agricultural activity that would depart from the static output of feudalistic times where agricultural output only expanded and contracted around fairly static population numbers and could only be increased by expanding the amount of land used for agriculture as population expanded. Figure 1 based on BEG data shows agricultural output beginning to increase beyond static amounts in England during the 16th Century. Other data from the BEG book show that different forms of agricultural output per acre per 50 year increments from 1270 to 1870 fluctuated only slightly until the around the middle of the 16th Century (see Table 3.06, page 97). Dobb believed that feudalism came almost fully to its end in Western Europe around the beginning of the 18th Century whereas Sweezy saw the 1300s to 1600s as a transition period from feudalism to capitalism, and then saw capitalism as the dominant economic system beginning in the 18th Century.

2. Clark Real Wage Index for Unskilled Agricultural Workers, (adapted from BEG, Figure 2.03: Indexed daily real-wage-rate of an unskilled agricultural worker, 1270-1870 (1700 = 100, log scale, page 60). This is used to show the plight and trials of agricultural workers whose fortunes did not improve until the late 14th Century, partially thanks to the Black Death/Plague and also in Dobb's and others' views to peasant revolts and resistance. With labor shortages, higher pay, and resistance, a crisis in the mode of production began in the manorial system. Later, however, with

the onset and growth of capitalism, their fortunes diminished somewhat as landholdings became more concentrated and many were displaced from their lands. This displacement resulted in the formation of a proletariat for capitalistic industries (Dobb 1947).[9] During most of the 14th Century, the aristocracy fought the gains in wages made by peasants and laborers by passing and enforcing laws limiting pay and compensation (e.g., the Statute of Labourers of 1351), although these statutes and regulations were resisted (Dobb 1947, Brenner 1976, Cohn 2007, Heller 2011)

3. Phelps-Brown & Hopkins (Munro revised) Real Wage Rate Index for Unskilled Building Laborers, (BEG, based on Figure 6.03: Phelps Brown and Hopkins (PBHM) (as corrected and revised by Munro) (1700 = 100), page 254). Figure 3 shows a trend similar to that of Figure 3 illustrating the fortunes of unskilled non-agricultural workers. Their pay increased after the Black Death perhaps also due to the pressures of class struggle, and then like those working in agriculture, their wages later fell. However, just as with the agricultural workers, the rise in their wages during the 14th century helped to trigger a first challenge to the status quo of exploitation.

4. Money for Rent. This is a dummy variable that marks the years in time period 1270 to 1870 of when rent was mostly paid for in-kind by rendering services and crops over to the feudal lord (coded as 0)versus a time period of when payment by money earned outside of the manor became the dominant form of rent payment to the lords (coded as 1). Most accounts mentioned so far in this paper indicate that money for rent became the dominant or majority form of rental payment beginning around or after the Peasant Revolt of 1381 (which was one of many major uprisings in Western Europe during the 14th Century), and so the years before 1381 are coded as 0, and 1381 and thereafter are coded as 1. Money rent is credited with allowing some serfs to gain the upper hand on their feudal lords because they could produce for selling things outside of the manor, and

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[9] Despite later declines, Pamuk (2007) shows that much of the higher earnings in England and Northern Europe after the Black Plague were higher than those of Southern Europe which led to a divergence in wages in Europe from 1300 to 1600.

the right to do so was won through years of struggle against their feudal lords, although the aristocracy learned to adapt to and thrive under it.

5. Dobb Sequence of Time. Dobb basically saw two time periods as important to his studies. Capitalism did not fully become dominant as an economic system until around the 1700s in his reasoning, and so this variables codes as 1 those years before 1700 and 2 those years for 1700 and afterward. The hypothesis is that the greatest amount of class struggle between serf and lord mostly took place before the 1700s and then became almost if not totally non-existent afterward.

Table 1 shows the principal components scoring coefficients among these variables and the Eigenvalues for the different components generated. Overall, these 5 variables are correlated well and hold together as some type of construct of the general arguments put forth by Dobb and others, and Component 1 is the component with the highest Eigenvalue. Its values were chosen as the ones to use for the Dobb Arguments variable. Because of missing values for some years, the number of observations is slightly less than 600.

(Insert Figures 4 and 5 and Table 2 around here)

Similarly, the Sweezy Arguments uses PCA to form an index of variables that would support Sweezy's and similar reasons advocated by others for the decline of feudalism. These variables are listed below.

Sweezy Arguments Variables:

1. English Indirect Taxation Receipts, 11-year centered moving averages of index numbers for revenue from indirect taxation in England, 1280-1810, set against deflated index numbers for this revenue (semi log scale), *The European State Finance Database* (https://www.esfdb.org/Default.aspx), Data prepared on English revenues, 1485-1815, by Professor P. K. O'Brien and Mr. P. A. Hunt (1993). The variable is used in the Sweezy arguments index as a measurement of market economic activity. It is national government tax revenue. As markets grew in size and volume, we would expect the values of this variable to

increase, and Figure 4 shows this.   As Figure 4 shows, tax receipts were fairly static in England until the late 1600s which could imply static economic conditions and peasant resistance to taxation as a well as a central government's need for tax revenues for its military and infrastructure spending.

2. English Direct Taxation Receipts, 11-year centered moving averages of index numbers for revenue from direct taxation in England, 1280-1810, set against deflated index numbers for this revenue (semi log scale), *The European State Finance Database* (https://www.esfdb.org/Default.aspx), Data prepared on English revenues, 1485-1815, by Professor P. K. O'Brien and Mr. P. A. Hunt (1993). This variable is also used to measure market economic activity and is also national level tax revenue. As with indirect taxation, as markets grew and replaced in-kind forms of trade and bartering within the medieval manor, we could expect the values for this variable to rise over time with feudalism's decline as illustrated in Figure 5. A low amount is deemed to exist under feudalistic conditions of slow/no growth, and there is really no pick up in receipts until the late 1600s, which would be not long after the arrival of a strong monarchy to throne in England and Great Britain (see point 5 below).

3. Silk Road. This is a dummy variable wherein the years that the Silk Road was open during the time period covered in the database is coded as a 0, 1270 to 1452, and as a 1 for when it was effectively closed or bypassed for trade, 1453 to 1870 (History.com Editors 2017). For Sweezy and others, the closing of the Silk Road triggered the monarchies of different European nations to undertake exploration of the oceans in order to find other ways to the far east, to build large merchant fleets, and to engage in the conquest of foreign lands once they found new territories ripe for plundering. These explorations and conquests also led to rivalries and wars among the competing thrones to see which nation/empire would be dominant in Europe.

4. English Urban Population, 1270 to 1870 (based on BEG, English Urban Population, 1086-1700 Table 4.04, page 153, Law (1967), Lee (1973), Wrigley (1985), Bairoch and Goertz (1985) and Rigby (2010). This is the portion of England's urban population as a portion of its overall

estimated population count. Following Sweezy and others' lines of thinking, the hypothesis is that as the urban population increased relative to the rural and farm population in England, feudalism hold on the economic system would begin to weaken.

5. Seventeenth Century. The rise of Protestantism and the ascendancy to the throne of a king who would unify England and Scotland are not part of Sweezy's set of arguments, but are arguments put forth as exogenous factors which lead to the triumph of capitalism as the predominant economic system in England. Max Weber and others argued that capitalism had its roots in Protestantism, and Heller (2011) and others have argued that the arrival of strong monarchs to the thrones of various Western European nations made it possible for capitalism to prevail in these nations. This variable codes as "0" those years before 1601 and 1 for 1601 and afterwards to reflect James I becoming King of England in 1603 and the enactment of various laws in the early 17th Century and later that severely restricted Catholicism in England after it had already been in decline due to the Reformation. Despite the victory of those against the monarchy in the English Civil Wars of 1642-1651, the monarchy was later restored. Finally, this time period would also roughly correspond to a rapid increase in the enclosure of agricultural lands that transformed English agriculture and led to great increases in its productivity (McCloskey 1972, Sharman 1989). These acts would later lead to class conflict within capitalism in England but may be considered an exogenous influence in accelerating the demise of feudalism in that they brought about big changes in English agriculture.

6. Population of London, 1270 to 1870, Demographia (no date, http://www.demographia.com/dm-lon31.htm). Since Sweezy and others argued that urban growth was especially important regarding the growth of major port cities throughout Western Europe, London's population as a portion of England's population is used as part of the index created to measure exogenous variables.

7. Sweezy Times. This is an ordinal variable for the degrees of the development of capitalism where the years for the period 1270 to 1399 are coded as 1s, the years 1400 to 1699 are coded as 2s, and the years 1700 to 1870 are coded as 3s. These codes reflect Sweezy's thoughts that the first period was mostly feudalistic, the second period was a transition period, and the third period was mostly capitalistic or a period dominated by capitalism.

The results of the PCA of these seven factors are shown in Table 2. The variables are positively correlated and the values generated for Component 1 are chosen as those for the Sweezy Arguments index since it has the highest Eigen value when compared to the other components created.

The Dobb Arguments and Sweezy Arguments indices are used to predict the BEG estimated real GDP per capita for England for the 1270 to 1870 period (Broadberry, Campbell, Klein, Overton, and Leeuwer 2015, pages 227-244). If Dobb, Sweezy and others are correct, then the transition from a feudalistic economy of virtually no growth should give way to an economy of increasing growth over time thanks to the triumph of capitalism over feudalism. Which of the two indices or sets of explanatory factors has greater explanatory power for economic growth and the change in economic growth over this time period could be an indicator of which set of arguments has greater validity. Additionally, since both Dobb and Sweezy and others involved in the debate were Marxian economists or historians, it would be interesting to see which set of factors has greater predictive ability when it comes to predicting an index of labor exploitation developed for the period of 1270 to 1870. Using a BEG index for the real wages of building and farm laborers to real GDP per capita (page 414, Figure 11.04) and taking the inverse of this, an approximation can made of how much labor was exploited on average during this period. According to Baran (1953), the amount of exploitation under feudalism was quite small compared to that of capitalism because of the greater use of tools and machinery under capitalism, and Figure 6 illustrates this. Up until the early part of the 17th Century, real GDP per capita as a share

of real wages was relatively low (except for the period of around the Black Death), and then it began to mostly climb thereafter. Both of these dependent variables (rising output per person and increasing labor exploitation reates) are indirect yet important indicators of a transition from feudalism to capitalism.

Results

(Insert Tables 3 and 4 around here)

Table 3 shows the results of predicting the natural log of real GDP per capita using the Sweezy Arguments and Dobb Arguments as independent variables. The natural log form of the GDP per capita index yielded a better fit for the model, and Box-Jenkins tests indicated this as the best choice for the model. The two independent variables were not collinear (variance inflation factor = 1.24), and Newey-West Standard errors were used since the Breusch-Godfrey test indicated that there was autocorrelation. Due to missing values, the number of observations was 533. The same tests results were shown for the model displayed in Table 4 where the two indices are used to predict an exploitation rate (real GDP per capita / real wages). The author can supply these test results and all data upon request.

In Table 3, both indices explain a great degree (90.38%) of the variation of real GDP per capita in England from 1270 to 1870, and the Sweezy Arguments is a stronger predictor as indicted by its test statistic score (43.3) versus that of the Dobb Arguments index (23.8). As Sweezy Arguments is increased by 1 unit, the real GDP per capita index goes up by 9 percent, and as the Dobb Arguments in increased by 1 unit, the real GDP per capita index goes up by 8 percent. In table 4, both indices explain about 84% of the variation in labor exploitation with the Sweezy set of arguments again trumping those of Dobb and his compatriots (test statistics of 40.5 versus -28.2 respectively). As the Sweezy index increases by 1 unit, exploitation goes up by 18 percent whereas as the Dobb index goes up 1 unit, exploitation goes down by 15 percent. The

Dobb Arguments coefficient is negative in this model, and this makes sense since the greater the wages of laborers and the greater the agricultural output, the less exploitation possible of serfs as well as wage laborers.

Finally, the Resnick-Wolff notion of the endogenous factors triggering the exogenous ones is considered in Table 5. There, the Dobb Arguments are used to predict the Sweezy arguments with a time lag of 20 years. The adjusted r-square is only around 22%, yet the Dobb Arguments variable is statistically significant at $\alpha < 0.05$. As Dobb Arguments goes up by 1 unit, the Sweezy Arguments variable forward 20 years goes up 0.81 units on average. Similar results are found with a lag of 10 years and no lag, although the latter has slightly less explanation of variance (around 19%). Therefore, the Resnick-Wolff idea carries some merit, and may offer a more realistic interpretation of events.

Conclusion

Although the Sweezy Arguments index performs better in the two regression models examined, the Dobb Arguments index is still statistically significant, and given that most of the data used in BEG is based upon the authors' estimates of piecing together myriad data sources from medieval England (which compared to all of the economic data available in modern times is very scant), one can argue that both indexes or set of reasons could offer some indirect yet reasonable and somewhat valid explanations of what occurred during the latter stages of feudalism and dawn of capitalism in England from around 1270 to 1870. Therefore, we are perhaps no better off than the non-statistical arguments given by both sides on the debate.

Despite the limitations of the data and the use of after-the-fact estimates of economic activity from centuries ago, this paper has endeavored to some type of statistical work and some hypotheses testing while addressing the general arguments of the Dobb-Sweezy debate and other reasons mentioned as exogenous and endogenous factors causing the decline of feudalism.

Whereas the results only slightly favor one side, in one sense, the results are not surprising. In history, events and outcomes of different epochs are often shaped by multiple factors, and to try to definitively say that all of the major or most important factors are either endogenous or exogenous can be an over-simplification of history. Therefore, perhaps the Resnick-Wolff thesis is more appropriate in trying to explain the transition from feudalism to capitalism.

The same is true perhaps of trying to predict the future of capitalism. Capitalism may continue as is or come to an end for a variety of reasons whether these reasons are exogenous or endogenous or both. Most popular and scholarly writings appear to assume that the capitalistic system is here to stay, although they also assume that fluctuations in economic performance will continue. On the other hand, and while perhaps in a minority, there are probably too many writings to review for this paper that mention a possible or probable demise of capitalism. However, a few recent and prominent ones can be mentioned. O'Connor (1979) writes that the necessity of a capitalistic system to address is contradictions through government programs and spending will eventually lead to a crisis in which tax burdens become too large or the amount of government debt becomes unmanageable. Mason (2015) predicts that capitalism will give way to another economic system thanks to increasing automation, artificial intelligence, and the way that information technology is disrupting markets, principles of ownership, and the workplace. Harvey (2015) criticizes capitalism as a system which lives beyond its means through a banking and finance system that takes on too much debt; a system which pays its workers too little to consume all of the goods it produces; one that is increasingly marked by market concentration and monopolization; one which is ruining the environment; and a system which promotes human and social alienation. All of these are put forth by Harvey as contradictions which can come back to haunt capitalism. Foster and McChesney (2012) write that capitalism is now in a period of chronic stagnation after the Great Recession of 2008-2009 and does not appear to be able to overcome this thanks to excess capacity and overproduction. All of these writings mention

reasons that are based upon inherent contradictions of the capitalistic system (endogenous factors) but also mention external threats to capitalism as well, such as environmental hazards brought on by some of the contradictions, namely over production.

In fact, many endogenous factors/threats or inherent contradictions, such as over production and greater automation can result in greater unemployment and underemployment, and these in turn can yield exogenous factors which can later disturb a capitalistic system. Higher levels of unemployment and underemployment of people can exacerbate the welfare state and create a greater tax burden or greater level of national debt. That is, if governments decide to continue to try to help people in these situations. On the other hand, they may decide not to do so under regimes operating under fiscal austerity. The current discussion in public discourse over a "guaranteed income" for all is set against a background of increasing artificial intelligence and automation which threaten to profoundly disturb the future of human work activities with many fearing higher and higher levels of unemployment and underemployment in the future. If capitalism cannot adapt to a possible exogenous and massive displacement of the labor force coming from its internal drive to cut costs and gain greater efficiency, then that could pose a significant problem for its continued advancement. In that way, it is not enough to focus on exogenous versus endogenous factors influencing the capitalistic system but instead to look at things from a broader perspective.

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Figure 1: Total arable, livestock and agricultural output, 1270-1870 (log scale, 1700 = 100)

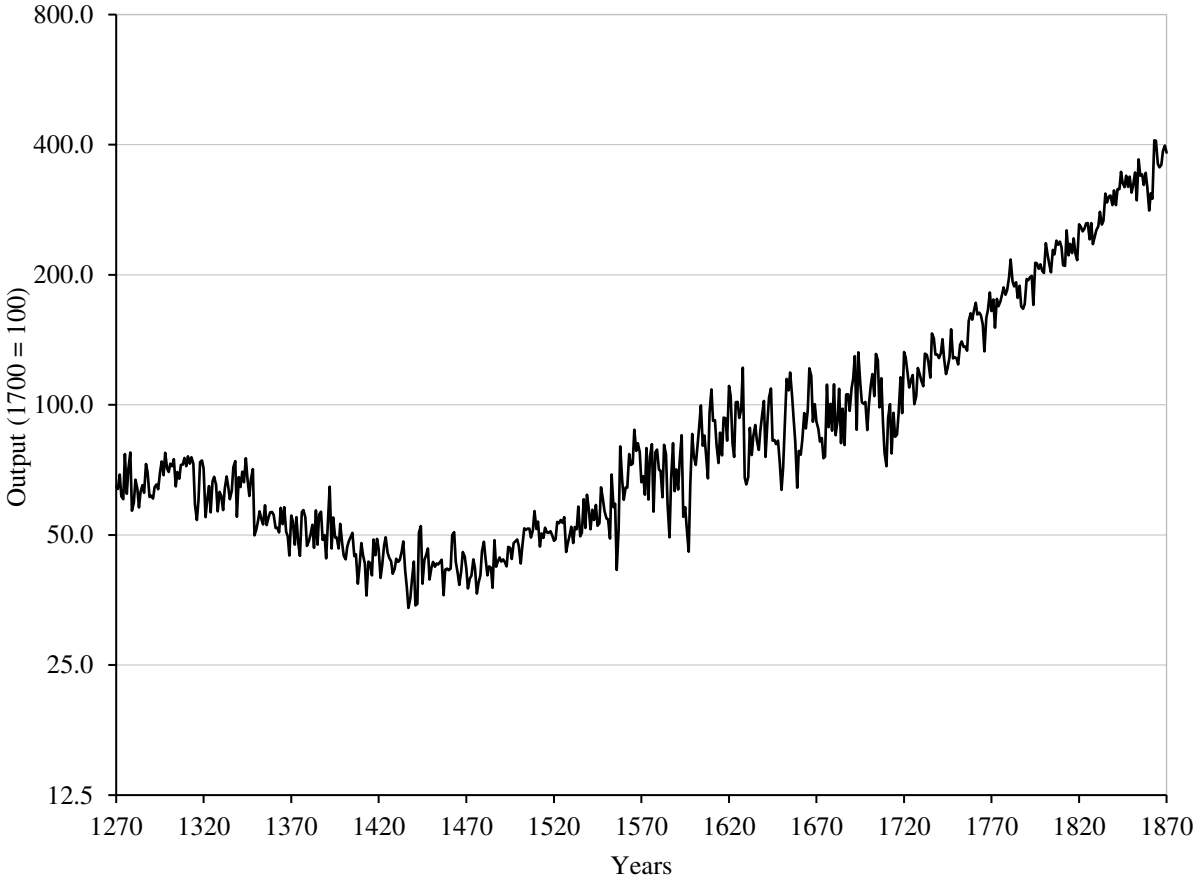(Source: adapted from Figure 3.04, BEG, page 114)

Figure 2: Indexed daily real-wage-rate of an unskilled agricultural worker, 1270-1870 (1700 = 100, log scale)
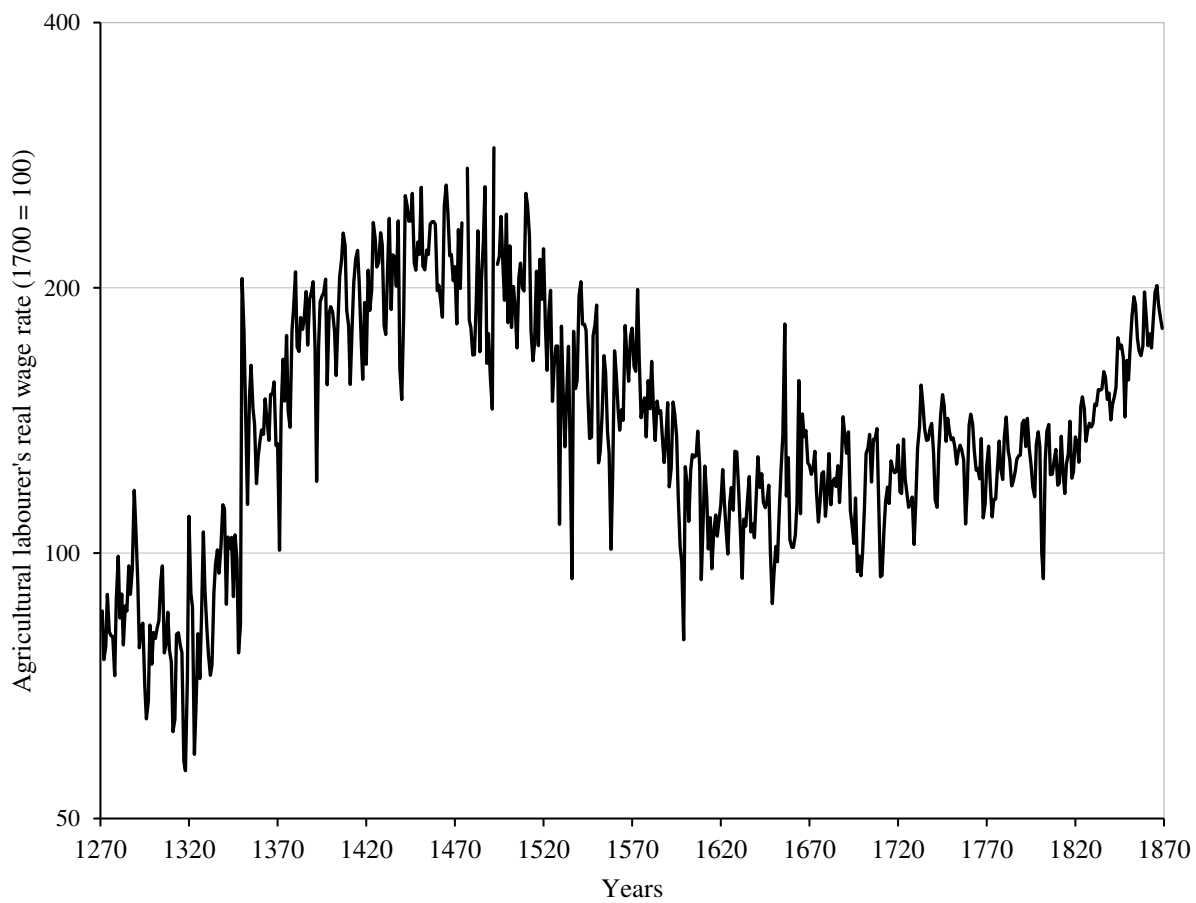
(Source: BEG, page 60)

Figure 3: Phelps Brown and Hopkins (PBH) (as corrected and revised by Munro) Real-Wage-Rate series for unskilled building workers (1700 = 100)
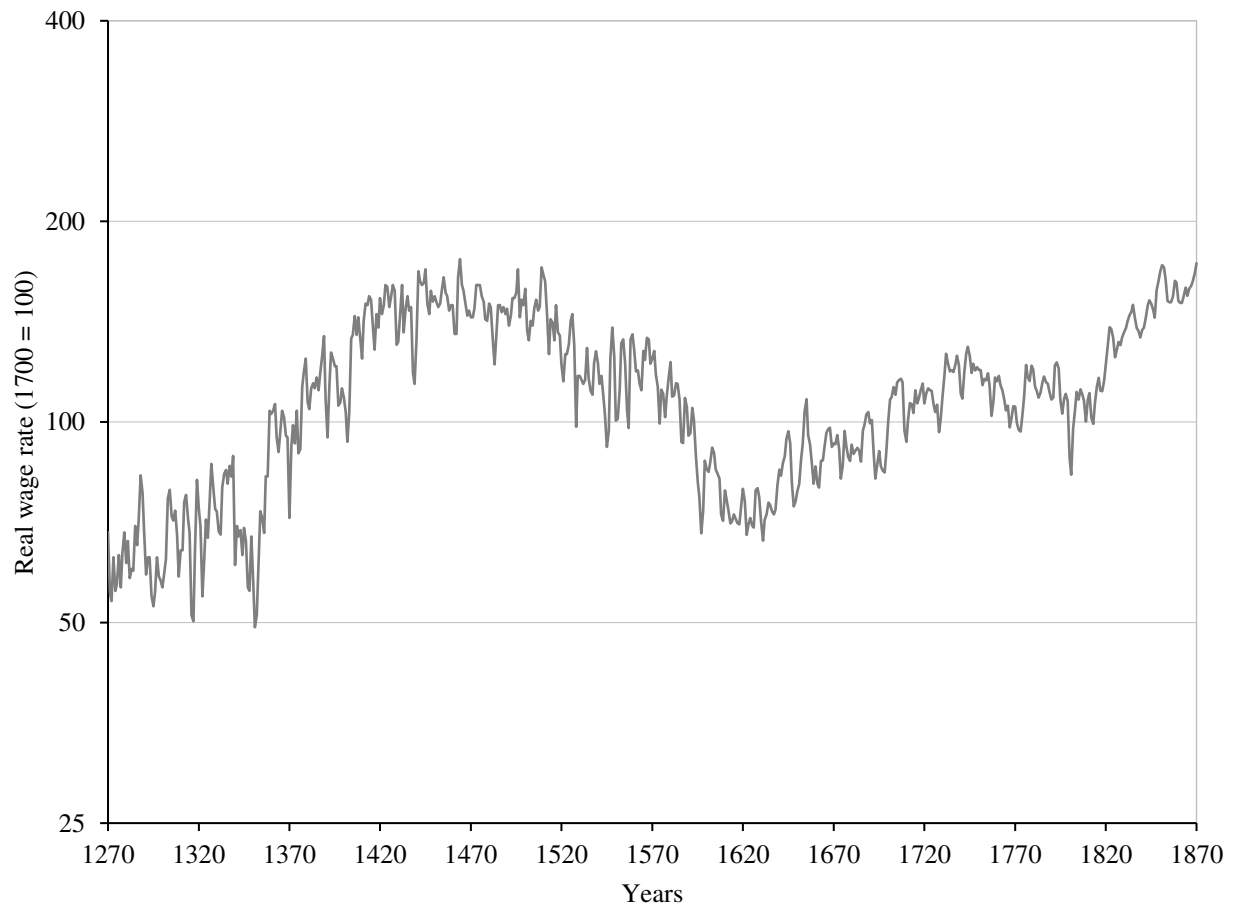
(adapted from Figure Source: BEG, page 254)

Figure 4: 11-year centered moving averages of index numbers for revenue from indirect taxation in England, 1280-1810, set against deflated index numbers for this revenue (semi log scale), *The European State Finance Database*
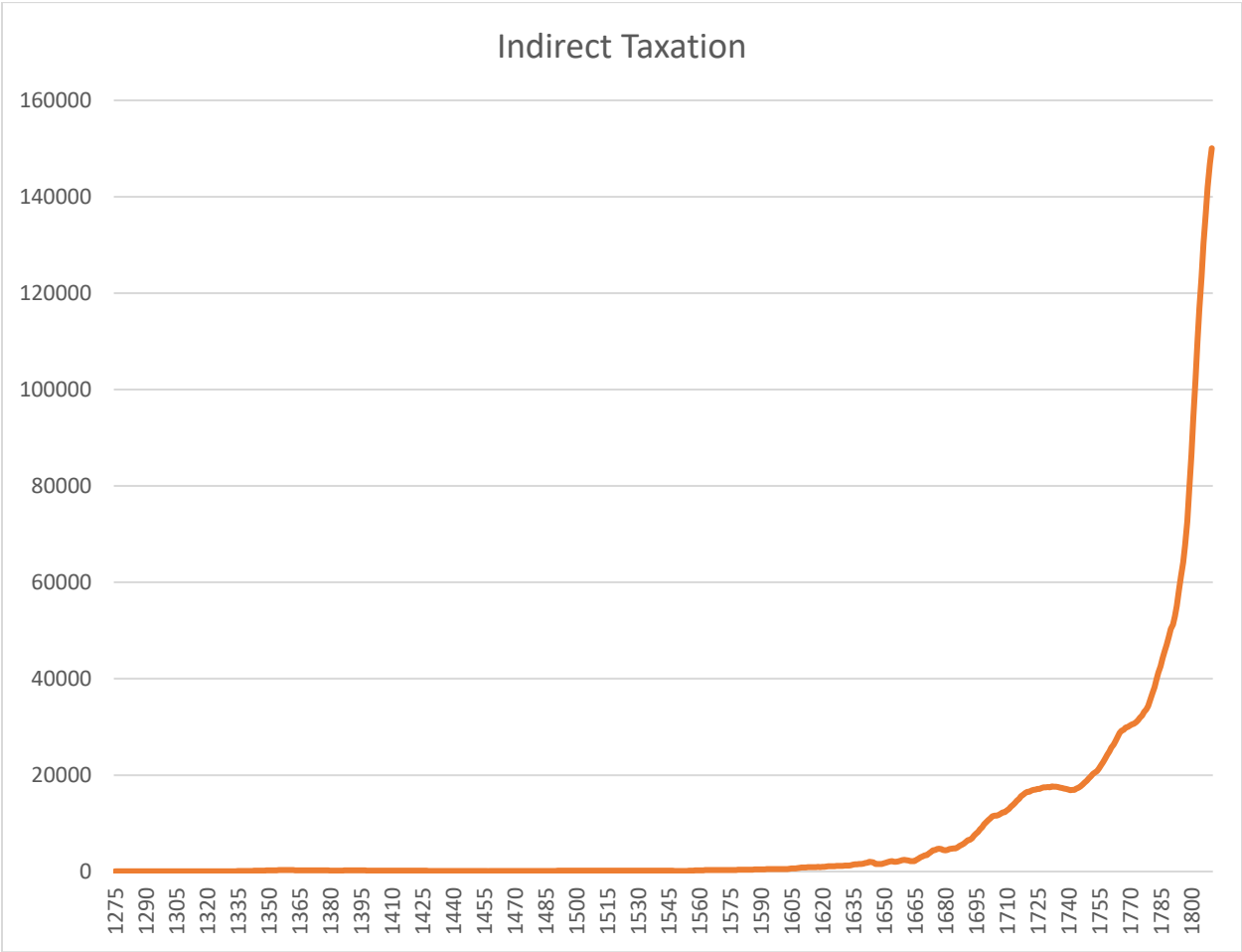
Figure 5: 11-year centered moving averages of index numbers for revenue from direct taxation in England, 1280-1810, set against deflated index numbers for this revenue (semi log scale), *The European State Finance Database*
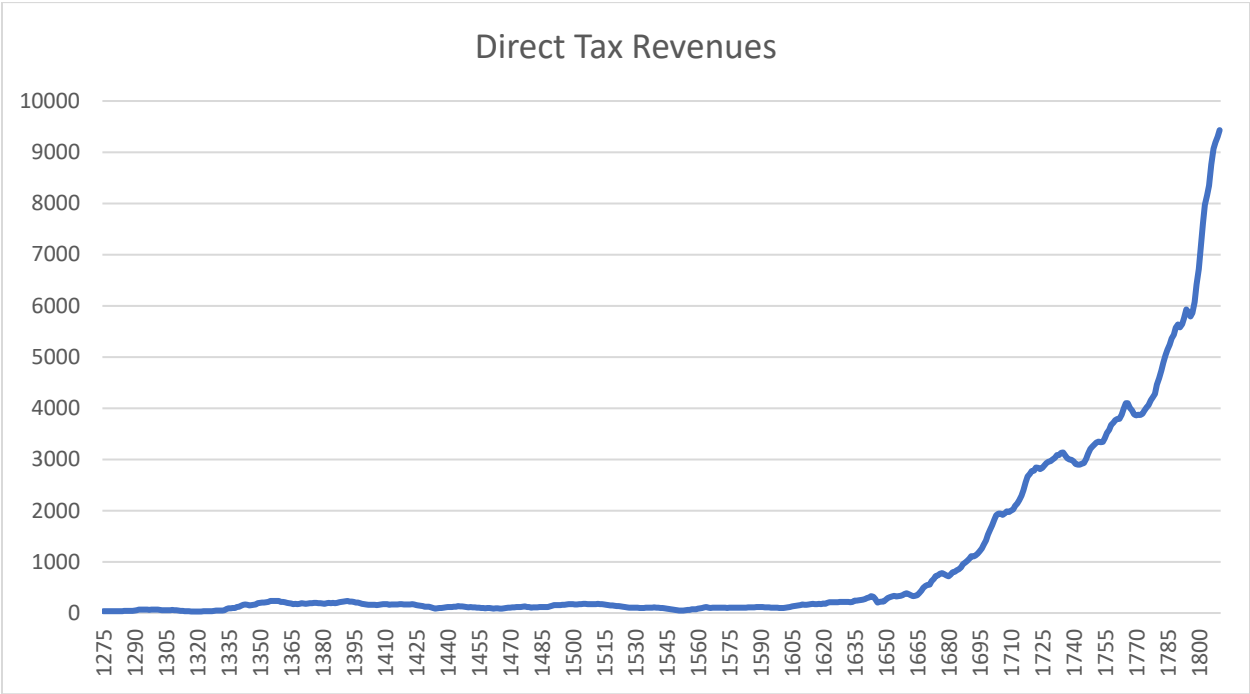
Figure 6: Labor Exploitation

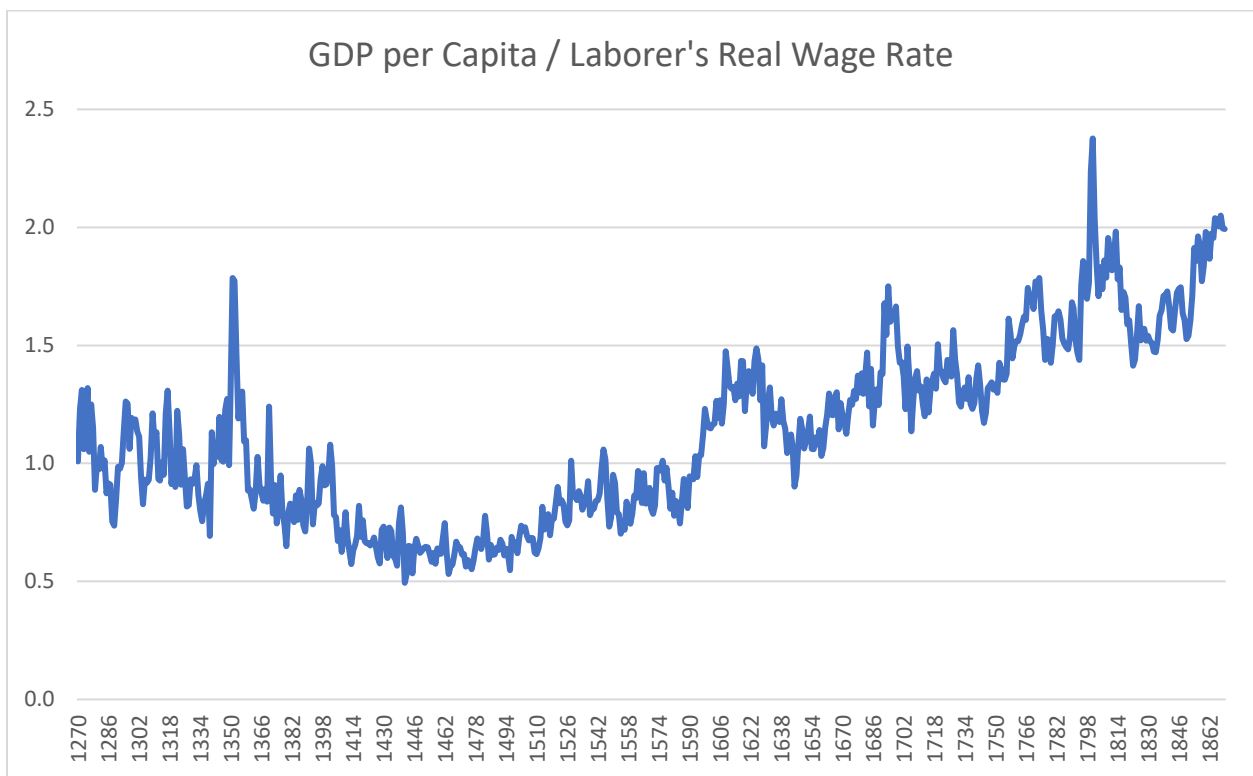(Source: adapted from Figure 11.04 in BEG, page 414)

GDP per Capita / Laborer's Real Wage Rate

Table 1: Principal Components Analysis, Dobb Arguments

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5
Clark Wage Index	0.419	-0.516	0.338	0.032	0.666
PBHM Wage Index	0.560	-0.267	0.312	-0.101	-0.713
Agric. Output Index	0.358	0.571	0.228	0.699	0.068
Money for Rent	0.497	-0.100	-0.855	0.102	0.039
Dobb Times	0.369	0.572	0.073	-0.700	0.207

Principal components/correlation Number of obs = 597

Number of comp. = 5

Trace = 5

Rotation: (unrotated = principal) Rho = 1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.435	0.709	0.487	0.487
Comp2	1.726	1.207	0.345	0.832
Comp3	0.519	0.320	0.104	0.936
Comp4	0.199	0.078	0.040	0.976
Comp5	0.121	.	0.024	1.000

Table 2: Principal Components Analysis, Sweezy Arguments

Scoring coefficients

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7
Direct Tax	0.405	-0.355	0.191	0.054	-0.077	-0.814	-0.048
Indirect Tax	0.356	-0.469	0.419	0.368	0.348	0.471	-0.005
Silk Road	0.251	0.728	0.634	0.038	-0.022	-0.042	0.039
English Urban Population	0.430	0.052	-0.191	0.029	-0.501	0.236	-0.685
Seventeenth Century	0.365	0.345	-0.550	0.350	0.553	-0.126	-0.024
Population of London	0.430	-0.005	-0.216	0.051	-0.459	0.169	0.726
Sweezy Time	0.379	-0.049	-0.024	-0.857	0.326	0.115	0.007

Principal components/correlation Number of obs = 536
Number of comp. = 7
Trace = 7
Rotation: (unrotated = principal) Rho = 1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	5.218	4.288	0.745	0.745
Comp2	0.930	0.487	0.133	0.878
Comp3	0.443	0.111	0.063	0.942
Comp4	0.332	0.275	0.047	0.989
Comp5	0.056	0.038	0.008	0.997
Comp6	0.018	0.015	0.003	1.000
Comp7	0.003	.	0.000	1.000

Table 3: Log Real GDP per Capita Index as Dependent Variable

Independent Variable	b (Newey-West SE)
Constant	4.3
Dobb Arguments	0.0757*** (0.0032)
Sweezy Arguments	0.0936*** (0.0022)

Adjusted r-square: 0.9038
n = 533
**p<0.05
***p<0.01

Table 4: Log Labor Exploitation Measurement as Dependent Variable

Independent Variable	b (Newey-West SE)
Constant	-0.67
Dobb Arguments	-0.1562*** (0.0055)
Sweezy Arguments	0.1755*** (0.0043)

Adjusted r-square: 0.841
n = 533
**p<0.05
***p<0.01

Table 5: Sweezy Arguments 20 Years Forward as Dependent Variable

Independent Variable	b (Newey-West SE)
Constant	0.103
Dobb Arguments	0.8069*** (0.0644)

Adjusted r-square: 0.22
n = 533
**p<0.05
***p<0.01