Paul Baran's Economic Surplus Concept, the Baran Ratio, and the Decline of Feudalism

Lambert, Thomas

University of Louisville

16 March 2020

Paul Baran's Economic Surplus Concept, the Baran Ratio, and the Decline of Feudalism

by

Thomas E. Lambert, PhD
Room 112, College of Business
University of Louisville
Louisville, KY 40292
Phone: 502-852-7838
E-mail: Thomas.Lambert@Louisville.edu

Abstract

In his book, the *Political Economy of Growth* (1957), and in an article he wrote several years earlier (1953), the economist Paul A. Baran noted how in an economic system characterized by a hierarchy of classes and where economic and political power are concentrated in the top class of such a system, the amount of output and income above what is consumed by most people (e.g., food, clothing, housing, public safety, education) mostly goes to the top class. This extra amount is what he called the economic surplus, a form of savings or income left over after consumption. In a feudalistic system, there is little incentive to use the proceeds of this type of surplus to buy more tools and equipment for more production of output and income. The lord or baron has little incentive to lend or give serfs money because he may not benefit from any increased productivity by them. It is with capitalism that such incentives to re-invest in production become important. This paper uses recently published and estimated historical data to illustrate Baran's observations and thoughts on feudalism. It is shown that during the 13th and 14th centuries in England that the economic surplus declined, and this decline helps to explain the "crisis of feudalism" that started in the 13th century. It is not until several centuries later when capitalism becomes the dominant economic system that the economic surplus begins to rise on a consistent basis probably due to the reinvestment of a portion of the surplus into productive activities and a greater ratio of capital income to rental income and a greater ratio of investment to economic surplus. However, and somewhat surprisingly, by the 19th Century the surplus still does not attain levels reached in the 13th Century.

March 2020

Introduction and Background

There is a vast amount of scholarly literature on the causes of the decline and end of feudalism in Western Europe, and it is impossible in a short paper to give credit to all of those who have contributed to the study of the decline of feudalism. Although not a primary participant in the debate among economists known as the Dobb-Sweezy debate (Dobb 1947, Sweezy 1976 (1950)), Paul A. Baran saw the critical flaw in feudalism as one in which the output and income created above an amount necessary to meet a society's needs was basically wasted by the aristocracy and the Church through spending on grand castles, cathedrals, minstrels, and wars of conquest and plunder.[1] Baran (Chapter 2, 1957) labeled such extra output and income as "actual economic surplus", which is distinct from potential economic surplus. The latter is the actual economic surplus that would be obtained if an entire society's labor and capital were fully and productively employed in useful occupations and pursuits (farming, making clothes, etc.) and not in unproductive activities such as those pursued by noblemen and clergy during feudalism or such activities as advertising, defense expenditures, and excessive managerial compensation under capitalism. Baran goes so far as to label noblemen and clergy as "parasites" thriving off the output of the serfs. The concept of an aggregate, actual economic surplus, as distinct from the concept of economic surplus in supply and demand analysis, was further developed later by Baran and Paul M. Sweezy (1966)[2]. Sustained economic growth is through absorption of the surplus by investing it in capital goods (tools, plant and equipment, new businesses, and new technology) or by the government investing more money in education, infrastructure, and/or in health care. This is done in most developed, capitalist economies but was not really done in any form under feudalism. In the book, Baran concludes that many different developing economies in the world suffer from a situation in which their economic and political leaders are either large land or mine owners or their representatives ("compradors") who run their nations in a

---

[1] Long before the Dobb-Sweezy debate, Engels (1957 (1884)) noted the wastefulness of medieval aristocracies in Europe.
[2] See also pages 238-239, *The Age of Monopoly Capital: The Selected Correspondence of Paul A. Baran and Paul M. Sweezy, 1949-1964* by Baran and Foster, editors (2017). Both Baran and Sweezy thought that the feudalistic economy was somewhat static and stationary and that because of wasteful/unproductive activities any economic surplus generated by such an economy would be small in comparison to that generated by capitalism, which is a more dynamic system that has higher levels of productivity and reinvestment of at least part of the economic surplus.

feudalistic manner while allowing their economies to be exploited by the foreign capitalist interests of developed economies. Such exploitation keeps many of these societies on the periphery of the global economy and keeps them in an underdeveloped economic state.

Within the last 20 years or so different estimates of English medieval economic activity have been published, and these comprise perhaps the most detailed measures of economic records when compared to databases on other European nations and/or regions. Clark (2009) has published and posted on his website data for national income accounts, population, prices, wages, and land rents for England from 1209 to 1860 and/or 1868. He has estimated wage, capital, and land rent shares of national income using estimates of pay, work days, interest rates, values of ships, iron works, and estimates of farm, public (canals, roads and bridges) and real property values. Broadberry, et al, (2015) have written a book which contains some estimates made by Clark and others as well as their own on English and British wages, prices, population, GDP, real GDP, and real GDP per capita among other economic measurements from 1270 to 1870. This paper uses data from these sources in order to see if Baran's concept of the economic surplus and a new concept titled the "Baran ratio" (Xu 2019) can be used to partially explain and describe the transition from feudalism to capitalism and any possible transition from capitalism to some other type of economic system.

Analysis

One can try to estimate Baran's concept of the economic surplus for England by combining Clark's estimates of English capital income, land rent, farm income, indirect taxation, and housing rent and dividing this by Clark's estimate of net national income. With the exception of some taxation revenues, capital income and land and housing rent income, and some government tax revenues (such as those going to help a monarch and his/her family personally) would represent amounts accruing mostly to those of the upper classes in a feudalistic society or transition economy just as profits, interest, dividends, royalties, rental income accrue to the upper class of a capitalistic society with tax revenues often benefiting the military ("wasteful expenditures" according to Baran) or more necessary social programs,

especially educational expenditures (Baran 1957, Baran and Sweezy 1966). The exception to capital income accruing to the upper class would be the income earned off capital and garnered by small farmers who did not serve a lord, although as time passed, this income grew and became more and more concentrated in the hands of large landowners and a landed gentry. To be more consistent with the concept of economic surplus, one would also have to estimate the value of or expenditures on activities that Baran (1957) and Baran and Sweezy (1966) claim are unproductive or wasteful. In a capitalistic society such activities include advertising, marketing and distribution, finance/insurance and real estate services, militarism, and research and development on such things as package design or color (Baran and Sweezy 1966). For a feudalistic society, Baran claims that such unproductive activities would be the building of grand cathedrals and castles, the employing of minstrels and court jesters or spending on legions or armies designed to control the peasantry or to engage in wars of conquest and/or plunder. These endeavors provide no "use" value in sustaining or promoting human life and add no future productive activity to an economy.

Baran notes that Thomas Malthus thought that by the aristocracy spending so much on frivolous things that there was a stimulus effect on the medieval economy; yet Adam Smith was critical of the employment of unproductive labor and spending on unproductive pursuits (1957, pages 24-25). Unfortunately, not enough detail for a long enough period of time is available in the estimates reviewed for this paper to allow estimates of such unproductive activities. Therefore, estimates of capital, land and home rental income earned and taxes collected are used to estimate to economic surplus.

(Insert Figure 1 around here)

Figure 1 shows the economic surplus as a portion of net national income (NNI) for England from 1209 to 1868 using Clark's data. Some argue that feudalism ended in England in the later years of the 15th century whereas others argue that feudalism ended in England in the late 18th century or early 19th century. As can be seen from Figure 1, the economic surplus as a percentage of NNI declines during the 13th and 14th Centuries and becomes mostly stationary in the 15th and 16th Centuries until it begins to

4

recover in the 17th Century and then stays at levels in the 18th and 19th Centuries not seen since the 14th Century. According to Clark's data, total wages grew as a share of net national income as rental and capital income remained mostly the same during the 13th to the 16th Centuries, and this wage growth is probably due to the employment growth generated by cities, ports, and increases in "free labor"; labor shortages due to famines and plagues; and the collapse of the demesne system. It is not until the 17th Century, perhaps due to events such as the continuance of the enclosure movement, the Tenures Abolition Act of 1660, and the growth of large trading companies and colonies and ports, that capital income begins to rise to higher levels so that the economic surplus as a percentage of NNI comes closer to what it was in the 14th Century. This increase in capital income would possibly point to capitalism possibly beginning in the 17th Century.

(Insert Figures 2 through 4 around here)

In a pattern similar to that of Figure 1, Figure 2 illustrates that the amount of economic surplus relative to wages gradually declined during the 13th and 14th centuries with the exception of the first 60 years or so of the 14th Century, and perhaps this is due to population and labor force losses due to the Great Famine of 1315-1317 and the Black Death as well as attempts by the nobility to limit wage increases through legislation or taxation (Lipson 1959). Wage income was also a smaller share of economic activity during the 13th and 14th Centuries when compared to subsequent centuries. Economic surplus as a percent of NNI and the ratio of the economic surplus to wages climb until about the time of the Napoleonic Wars, during and after which they go into a decline through 1868, probably due to wages and labor income becoming a greater share of national income with the industrial revolution in England despite the absolute value of capital income growing. Next, in looking at Figure 3, one can see that real NNI per capita (base years of 1860s) declines during the 13th Century and through the first 20 years or so of the 14th Century until it begins to rebound and slowly climbs back up until the middle of the 15th Century, mostly thanks to the growth of wage income as estimated by Clark. Subsequently, however, real NNI per capita begins to decline from the middle of the 15th to the 16th Century and then holds roughly

steady until the 1700s. It then begins a steady climb upward through 1868, which is about where Clark's

published data stops.   Figure 4 plots capital income as a portion of NNI from 1209 to 1868. This

diagram shows that capital income as a share of NNI basically started to collapse in the 14th Century and

did not really begin to rebound until around the second half of the 16th Century.

<div align="center">(Insert Figures 5 to 7 around here)</div>

Figure 5 shows the ratio of capital to land rent income increasing in the late 18th Century and

climbing dramatically in the 19th Century, and Figure 6 illustrates economic surplus per capita fluctuating

in a pattern similar to real NNI per capita that is shown in Figure 3. It is perhaps from the proceeds of

capital income earned in the 17th, 18th and 19th Centuries that provided the investment needed to propel

England and Britain forward during this period as shown in the real GDP per capita growth trend in

Figure 7, which uses data from Broadberry, et al (2015). Finally, Table 1 gives the Pearson correlation

coefficients among real GDP per Capita, real economic surplus per capita, and real NNI per capita from

1270 to 1868. All coefficients show positive and statistically significant associations among the three

variables. Most importantly, as economic surplus rises, so does GDP per capita and NNI per capita,

although the gains in GDP and NNI may not have been equally shared among all classes.

Although Baran (1957, page 60) claimed that the economic surplus under feudalism should be

small when compared to competitive capitalism (17th and 18th Century eras) and even less so when

compared to monopolistic capitalism (19th Century era), the figures displayed in this paper possibly

suggest otherwise. If Clark's numbers (2009) are correct, then the 13th Century saw large degrees of

economic surplus which dwindled and did not rebound until capitalism became the dominant economic

system in the 1700s. This upswing in the 1700s is probably due to the surplus being at least partially

reinvested during that time period rather than being wasted on unproductive activities as in the 13th and

14th Centuries. The high levels of economic surplus for the 13th and 14th Centuries would indicate a much

higher degree of wastefulness than what Baran might have estimated, and if Malthus was correct, much of

this surplus was perhaps spent and used to prop up a feudalistic system by spending on unproductive

labor and pursuits. With land shortages developing, which in turn limited agricultural production, and with labor force shrinkage due to diseases and famines, then any medieval economic surplus probably began to shrink. Feudalism was then plunged into a severe crisis.

The Baran Ratio

Recently, Xu (2019) has developed a concept called the Baran ratio (BR), which is an economy's amount of investment divided by its economic surplus, which he defines as the income share of the 90th percentile and above in a nation. However, using the share of income of the top 10% is done by him as an approximation because he attempts to make comparisons among different nations.

> Ideally, economic surplus could be calculated as the residual of national income deducting social-essential consumption. However, this is often impossible due to lack of data. Alternative methods include utilizing property share of GDP, which equals one minus labor share, and the top income research pioneered by Thomas Piketty. This is particularly helpful when the labor-share data is missing. In this article, I have used the top 10 percent share of the national income as a proxy for surplus. Other top income shares are often not available for most countries in the sample. (Xu 2019).

For this paper, capital, land, and home rental income and indirect tax revenue estimates are available, and so a Baran ratio that uses something close to Baran's original concept of an economic surplus (capital income + land rental income + home rental income + indirect tax revenue) can be constructed by taking the sum of these amounts and using them in the denominator of a ratio where the numerator is the estimated amount of investment in England over time so that

$$BR = \text{Investment} / \text{Economic Surplus}. \tag{1}$$

This basically represents the amount invested out of capital, land, and housing income as well as public investment. The amount of capital and public investment in England is approximated on a decadal basis from 1200 to 1860 using Clark's data (2009), and these in turn are divided by the economic surplus estimated for each decade. Clark has published real national income, real returns to capital (public and private), capital shares of national income, and capital income estimates on a decadal basis for England

from 1200 to 1860. In standard economics and finance textbooks, interest rates, or the returns to capital, are supposed to equal income from capital divided by the value of the capital.

$$r = \text{Income} / \text{Capital} \qquad\qquad (2)$$

Setting Capital = Income[3] / r , one can estimate the amount of real capital (public and private) in the English economy for each decade from 1200 to 1860 using the Clark data. Figure 8 shows the levels of estimated real capital from 1200 to 1860, and capital levels really do not begin to rise until around 1700 and later. When the change in capital levels is calculated from one decade to the next in order to estimate real investment rates from one decade to another, a Baran ratio can be estimated for the decades. Figure 9 shows levels of the Baran ratio from 1200 to 1860 where high levels are not reached on a consistent basis until the late 16th Century. Levels above 1.0 are not attained until around 1800, and this is probably due to borrowing and/or using saving/retained earnings to finance investment. Finally, when calculating a Pearson correlation coefficient between the Baran ratio and real investment per decade, a statistically significant coefficient of 0.74 is found, indicating a high level of correlation. Table 2 displays this result and shows a statistically significant correlation between real net national income per capita (NNI per capita base year = 1860) and the BR as well as a statistically significant relationship between real net national income per capita and real investment.

(Insert Figures 8 and 9 and Table 2 around here)

When it comes to productivity levels, mainstream economic theory predicts that greater investment levels in capital should result in greater productivity or greater output per worker. Using Clark's data, Figure 10 shows that productivity levels for agriculture in 13th Century England were fairly high[4] and then fell during the first half of the 14th Century before rebounding later in that century and in the 15th Century. They then decline during the 16th Century before returning to higher levels in the 17th

---

[3] This is capital income adjusted by Clark's GDP deflator.
[4] This is a result which also surprises Clark.

Century, which is about the time of the English agricultural revolution and the acceleration of the enclosure movement. The Baran ratio depicted in Figure 9 shows consistently higher levels around the 1700s, and Figure 8 does not show higher capital levels until then too. Therefore, the high levels of agricultural to non-agricultural levels of output in the 15th and 16th Centuries have to be explained mostly by factors other than investment, and these may include farmers enjoying greater payments for their output, therefore encouraging them to produce more; or the greater productivity may be due to peasants and tenant farmers being coerced to produce more by their landlords and to compete against one another even as the enclosure movement was starting in the late middle ages with more and more peasants having to move off the land (Brenner 1976, Dimmock 2014). The enclosure movement was met with resistance, and with the landlords finally triumphant in the 17th Century, according to Brenner (1976), this would have made capital investment in farms safer and more effective with fewer workers on each farm but greater output per worker.

Interestingly, the productivity levels attained in the 18th and 19th Centuries are not dramatically higher than those attained in the peaks of prior time periods. Cockshott (2019, pages 95-96) cites and uses figures from McDonald (2002) to argue that feudal farms were just as efficient as later forms of farming under capitalism. It is only speculation as to whether this was due to coercion and exploitation given a lack of consistent capital investment and innovation prior to the 1600s or if it was due to low population levels in England during the 14th and 15th Centuries. Figure 6 shows that economic surplus per capita was high during the 14th and 15th Centuries, although the economic surplus as a portion of NNI was low during these centuries.

(Insert Figure 10 around here)

Discussion and Conclusion

The economic surplus in England from the 13th and up to the 18th Century does not appear to have been invested that much in capital that would have led to greater levels of economic growth, output, and

standards of living in a capitalistic system. Although actually higher in the 13th Century than what would have been expected, the surplus still dwindled and mostly stagnated for the next several centuries perhaps due to several factors such as plagues, famines, wars, class struggles between serfs and nobleman and then peasant farmers and their landlords, the growth of wage laborers and higher overall real wages[5], the growth of low profit margin tenant farmers, and the proliferation of small but low-profit-margin petty producers that were the forerunners of the competitive stage of capitalism. If correct, then this set of factors would support a gradual and evolutionary notion of a transition to capitalism, an economic form which requires the generation of a large amount of surplus and the accumulation and continued reinvestment of some if not all of the surplus according to Baran. Cockshot (2019) and many others such as Resnick and Wolff (1979) have noted that capitalism started in different parts of the globe and suffered many setbacks and failures before fully developing and coming to full dominance as the main economic system in the 19th Century, and perhaps much of the variation in the diagrams displayed in this article illustrate this as English society transitioned from mostly a feudalistic system to a mostly capitalistic one over several centuries. It is also known that feudalism continued to exist as economic system as capitalism became dominant in England and Western Europe just as slavery was still an economic form of organization in many parts of the globe by the time of the 19th Century.

Despite large amounts of surplus in the 13th Century, and perhaps this was the case in prior centuries too, feudalism did not practice any form of reinvestment. Therefore, with famine, plagues, land and labor shortages, the surplus dwindled, which set off a crisis in feudalism, especially for those benefitting from the surplus, the English nobility and aristocracy. With less surplus in the next few centuries, especially relative to wages, the coercion of serfs and peasants could have been one way that a declining economic system could have tried to get more output and surplus from its workers This is along the lines of the thinking of Dobb, Brenner, and others who thought that feudalism ended due to

---

[5] Allen (2011 and 2015) argues that high real wages in England in the 18th Century gave yeoman farmers the incentive to innovate and adapt new labor saving technology and methods.

endogenous factors. In the meantime, the growth of cities, ports, foreign trade, town markets, tenant farmers, and the continued growth of wage laborers set in motion the development of institutions that would later help to give rise to capitalism as the old feudalistic system was dying. Reasoning along these lines can be credited to Sweezy and others who argued for mostly exogenous factors as causing the downfall of feudalism. A compromise view by Resnick and Wolff (1979) claims that both endogenous and exogenous forces worked together to bring down feudalism and provide a transition to capitalism.

This paper has attempted to use Baran's concept of an economic surplus as a means of illustrating the crisis that hit feudalism in the 14th Century and the transition to capitalism, which if the figures displayed in this paper are correct, probably began to take off in England in the 18th Century. It does not appear that Malthus' notion of excessive and extravagant spending by medieval nobility had any long run benefits for a feudalistic society. Such spending may have improved employment and utilization of some resources in the short run of a feudalistic society, but without productive investment, when the feudalistic economy was hit by exogenous shocks (plagues, famines, etc.) and had to face endogenous contradictions and constraints (class struggle, land and labor shortages), it was not adequately prepared to overcome them by investing in new farming or labor techniques. Instead, if Brenner and Dobb are correct, coercion of the labor force was relied upon to try to keep the feudalistic status quo. However, this perhaps failed to yield an economic surplus suitable to keep the upper class in a strong position over the long run. Instead, a new economic system had to develop which raised the economic surplus back up to its previous levels.

Similarly, capitalism faced a severe crisis on a global basis in the 1930s. The economic surplus collapsed along with the wages and standard of living for millions of workers (Baran and Sweezy 1966). Some nations resorted to fascism in order to try to restore the economic surplus of their societies to previous levels. Others, such as the United States under Franklin D. Roosevelt's "New Deal", experimented with social and public infrastructure spending in order to keep the capitalistic system from collapsing. Keynes (1936) argued that in a capitalistic system there is a tendency for under investment or under consumption which can lead to economic crisis. He therefore believed that there must be a certain

level of the socialization of investment or a certain level of government spending on public investment items to keep a capitalistic system from going into periodic crises. In the minds of Baran and Sweezy (1966), this required a certain amount of reinvestment of the economic surplus whether into productive or unproductive pursuits, although they thought that the Keynesian prescription to remedy economic crises was overly simplistic since capitalism had too many internal contradictions. One problem according to Baran and Sweezy was finding enough outlets for any type of reinvestment of the surplus whether into productive or unproductive uses. Often there are not enough outlets for such reinvestment, and this in turn can lead to recession or depression as a decline in investment can lead to a contracting economy.

(Insert Figures 11 to 13 around here)

Much has been written about the post-World War II economic boom in the United States and in other advanced capitalistic nations that lasted until around the 1970s. Figures 11 and 12 show the growth in different forms of US nonresidential investment since the 1920s. From the late 1940s to the 1970s, the level of nonresidential fixed assets and nonresidential investment as a portion of Gross Domestic Product went up from around 10% to 14% of GDP, but then began to stagnate in the 1980s. Figure 13 illustrates that net private domestic investment as a share of GDP has usually been between 5 and 10% of GDP on annual basis but has not reached 10% since the 1980s and has hovered between 0 and 5% since 2007, the year before the start of the Great Recession of 2008-2009. These figures seem to suggest that US capitalism is coming up short in reinvesting it economic surplus in productive assets and new technology. This lack of reinvestment could also be showing up in declining rates of productivity increases in the US economy as shown in Figure 14. A lack of reinvestment would limit surplus absorption according to Baran and Sweezy (1966) unless more was spent of unproductive activities such as advertising, marketing, the industries of retailing or finance, insurance or real estate, etc. However, these activities do not increase the productive capacity of a society (just as feudalism's extravagant spending did not expand its capacity for output) and so may not help the long term resiliency of an economic system through helping to develop it productivity and output per worker, which in turn help to raise its standard of living.

If such productive reinvestment does not or cannot occur through private markets, then Keynesian economics would argue that it can occur through greater governmental spending on public works, education, and health care. On the other hand, in order to raise worker productivity, government policy could also take a less generous stance by refusing to enlarge infrastructure and social welfare programs and by giving employers more leeway in extracting more work and less pay from their workers. The latter would be somewhat akin to what the nobility often did to the serfs during the decline of feudalism. If capitalism is struggling since the Great Recession to achieve greater levels of surplus absorption, then it has two alternatives. It can either allow for greater socialization of investment or it can engage in greater worker exploitation. The former implies a transition to a greater level of socialism within capitalism, the later implies a course toward a certain degree of fascism and repression within a capitalistic system. The transition could be a long one and would depend upon how the economic surplus is used.

References

Allen, Robert C. 2011. "Why the Industrial Revolution was British: Commerce, Induced Innovation, and the Scientific Revolution." *Economic History Review* 64(2): 357-84.

Allen, Robert C. 2015. "The High Wage Economy and the Industrial Revolution." *Economic History Review* 68(1): 1-22.

Baran, Nicholas and John Bellamy Foster, eds. 2017. *The Age of Monopoly Capital: Selected Correspondence of Paul M. Sweezy and Paul A. Baran, 1949-1964*. New York, NY: Monthly Review Press.

Baran, Paul A. 1953. "Economic Progress and Economic Surplus.: *Science & Society, 17*(4), 289-317. Retrieved February 18, 2020, from www.jstor.org/stable/40400214 .

Baran, Paul A. 1957. *The Political Economy of Growth*. New York, NY: Monthly Review Press.

Baran, Paul A, and Paul M. Sweezy. 1966. *Monopoly Capital: An Essay on the American Economic and Social Order*. New York: Monthly Review Press.

Brenner, Robert. 1976. "Agrarian Class Structure and Economic Development in Pre-Industrial Europe." *Past & Present,* (70): 30-75. Retrieved March 7, 2020, from www.jstor.org/stable/650345

Broadberry, S., Campbell, B., Klein, A., Overton, M., & Van Leeuwen, B. 2015. *British Economic Growth, 1270–1870*. Cambridge: Cambridge University Press. doi:10.1017/CBO9781107707603 .

Clark, Gregory. 2009. "The Macroeconomic Aggregates for England, 1209-2008", UC Davis, Economics WP 09-19. http://faculty.econ.ucdavis.edu/faculty/gclark/data.html . Accessed on February 23, 2020.

Cockshott, Paul. 2019. *How the World Works: The Story of Human Labor from Prehistory to the Modern Day*. New York, NY: Monthly Review Press.

Dimmock, Spencer. 2014. *The Origin of Capitalism in England, 1400–1600*. Series: Historical Materialism Book Series, Volume: 74. London, UK: Brill Publishers.

Dobb, Maurice. 1947. *Studies in the Development of Capitalism*. New York, NY: International Publishers.

Engels, Friedrich. 1957 (1884). "The Decline of Feudalism and the Rise of the Bourgeoisie." *Monthly Review* April 1957, pp. 445-454. Originally written in 1884 and from an unfinished manuscript discovered amongst Engels posthumous papers: "Ueber den Verfall des Feudalismus und das Aufkommen der Bourgeoisie", Berlin DDR, 1953. https://marxists.catbull.com/archive/marx/works/1884/decline/index.htm . Accessed on October 29, 2019.

Keynes, John Maynard. 1936. *The General Theory of Employment, Interest and Money*. New York, NY: Harcourt, Brace.

Lipson, E. 1959. *The Economic History of England, Volume 1, The Middle Ages*. London: Adam and Charles Black Publishers.

McDonald, John. 2002. *Productive Efficiency in Doomsday England, 1086*. London, UK: Routledge Publishers.

Resnick, Stephen., and Richard Wolff. 1979. "The Theory of Transitional Conjunctures and the Transition from Feudalism to Capitalism in Western Europe." *Review of Radical Political Economics*, *11*(3), 3–22. https://doi.org/10.1177/048661347901100302 Accessed on March 8, 2020.

Sweezy, Paul M. 1976 (1950). "A Critique," in *The Transition from Feudalism to Capitalism*, edited by Hilton, Rodney, London, UK: NLB, pages 33-56. Originally published with Dobb in *Science and Society,* Spring 1950*:* Sweezy, Paul M., and Maurice Dobb. "The Transition from Feudalism to Capitalism." *Science & Society* 14, no. 2 (1950): 134-67.

US Bureau of Economic Analysis. 1929-2018. Table 1.1.3. Real Gross Domestic Product, Quantity Indexes.
https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey .
Accessed on February 27, 2020.

US Bureau of Economic Analysis. 1929-2018. Table 4.7. Investment in Private Nonresidential Fixed Assets by Industry Group and Legal Form of Organization.
https://apps.bea.gov/iTable/iTable.cfm?ReqID=10&step=2 . Accessed on February 27, 2020.

US Bureau of Economic Analysis. 1929-2018. Table 5.2.5. Gross and Net Domestic Investment by Major Type.
https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey .
Accessed on February 27, 2020.

US Bureau of Labor Statistics. 1947-2019. "Annual Nonfarm Business Output per Worker, Percent change from same quarter a year ago." www.bls.gov Accessed on March 11, 2020.
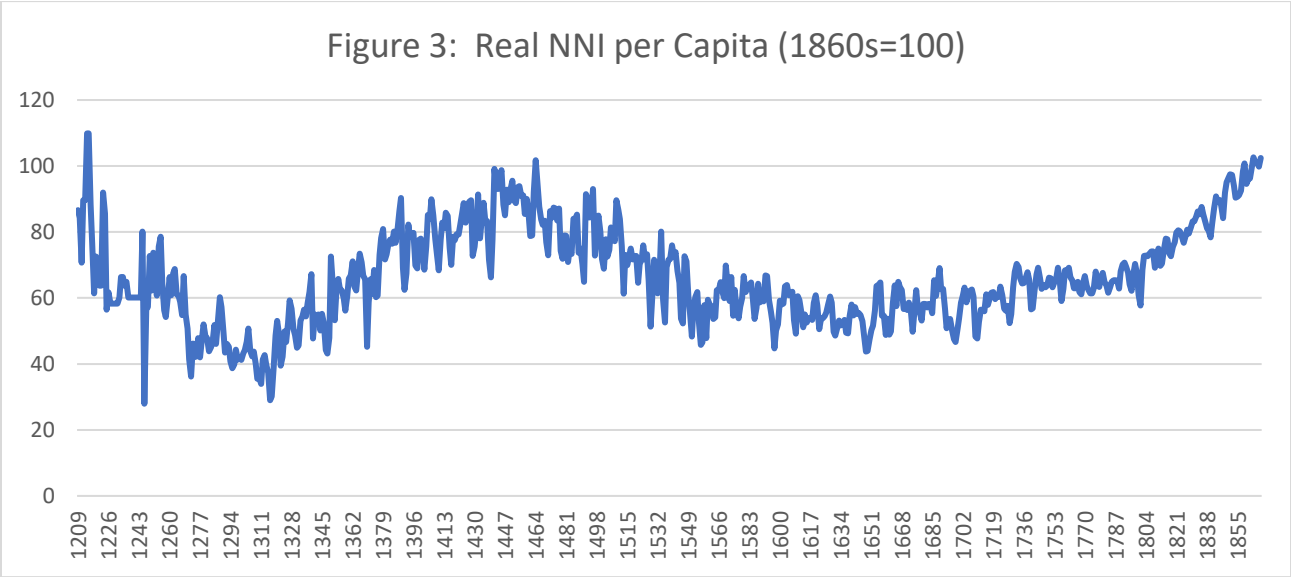
Xu, Zhun. 2019. "Economic Surplus, the Baran Ratio, and Capital Accumulation." *Monthly Review,* 70(10). March 2019. https://monthlyreview.org/2019/03/01/economic-surplus-the-baran-ratio-and-capital-accumulation/ . Accessed on March 4, 2020.
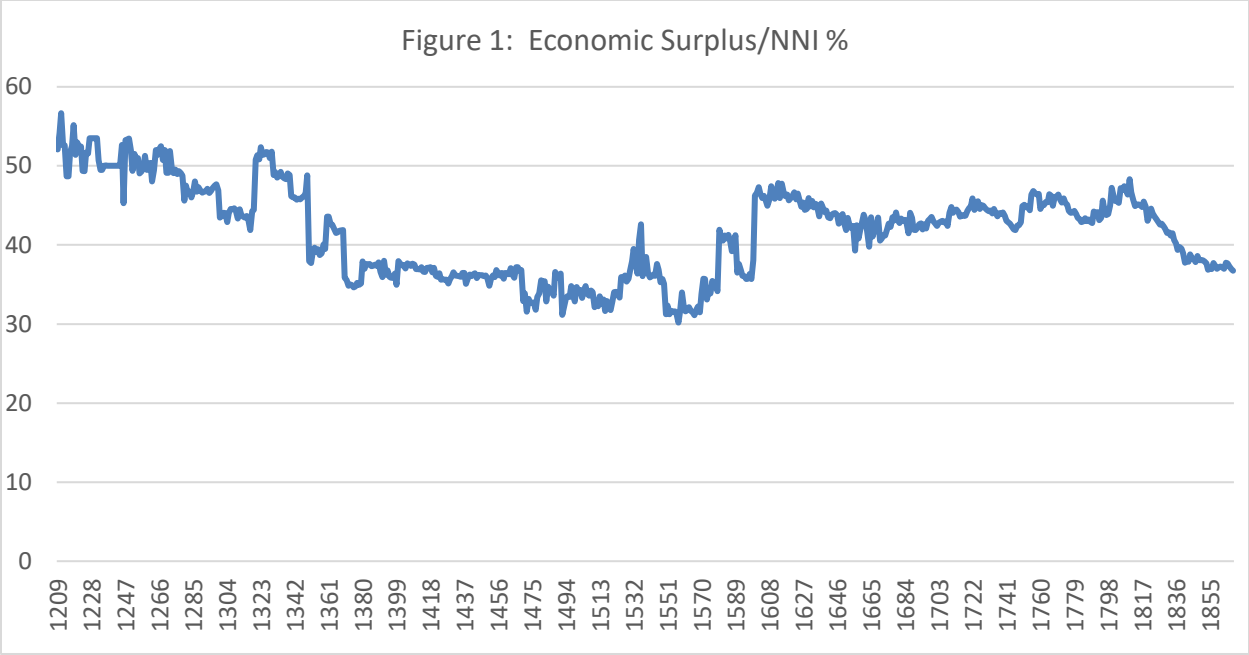
Figure 1: Economic Surplus/NNI %

Source: Author's representation of Clark (2009) data.

Figure 2: Ratio of Economic Surplus to Wage Income

Source: Author's representation of Clark (2009) data.

Figure 3: Real NNI per Capita (1860s=100)

Source: Author's representation of Clark (2009) data.

Figure 4: Capital Income/NNI %

Source: Author's representation of Clark (2009) data.

Figure 5: Capital Income/LandRent Income
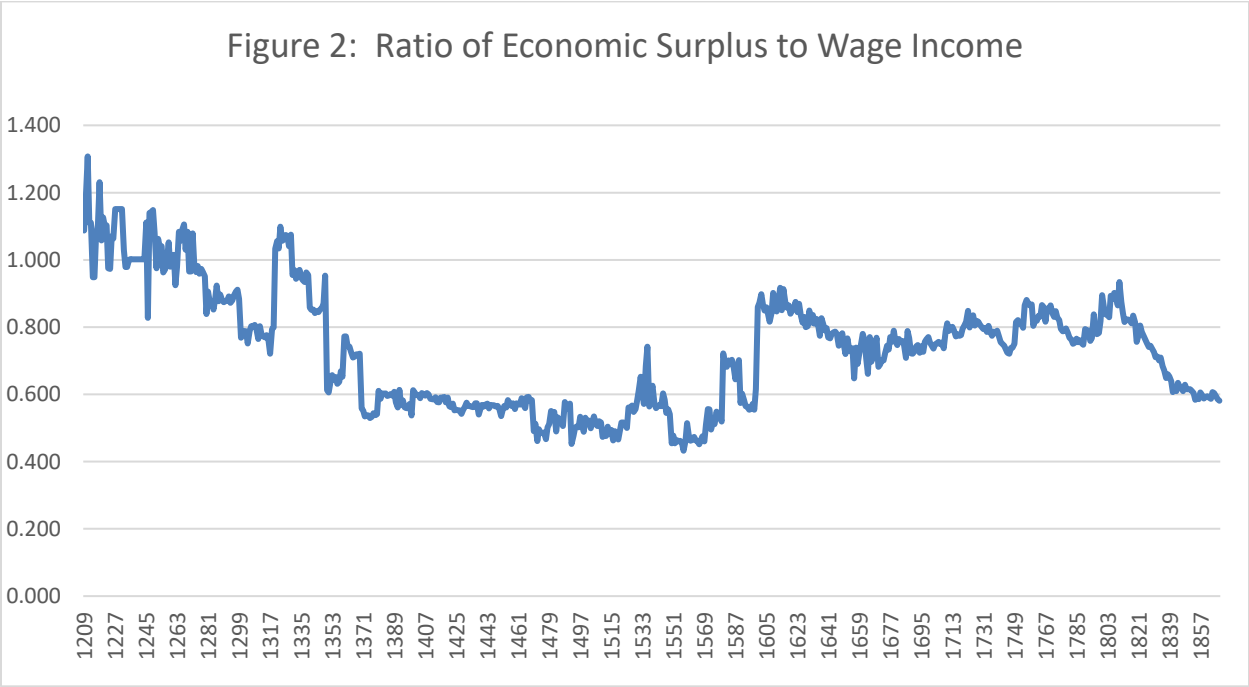
Source: Author's representation of Clark (2009) data.
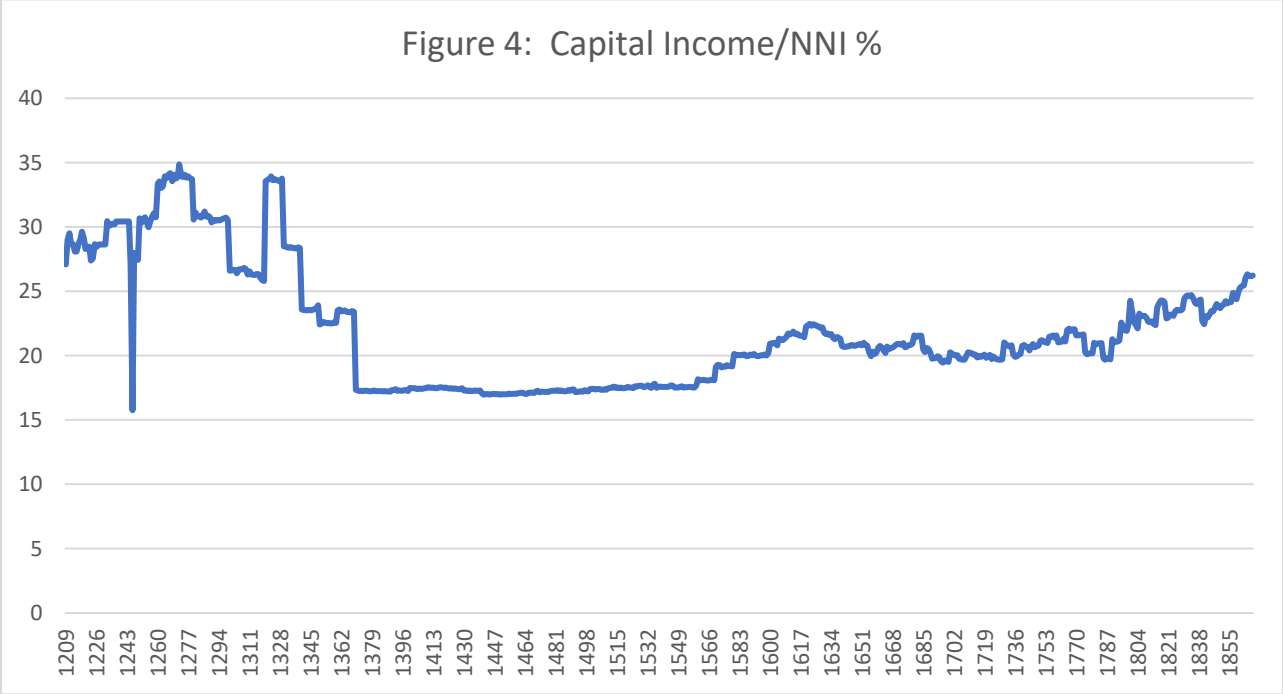
Figure 6: Economic Surplus Per Capita

Source: Author's representation of Clark (2009) data.

18

Figure 7: Real GDP per Capita, 1270 to 1870 (log scale, 1700=100)
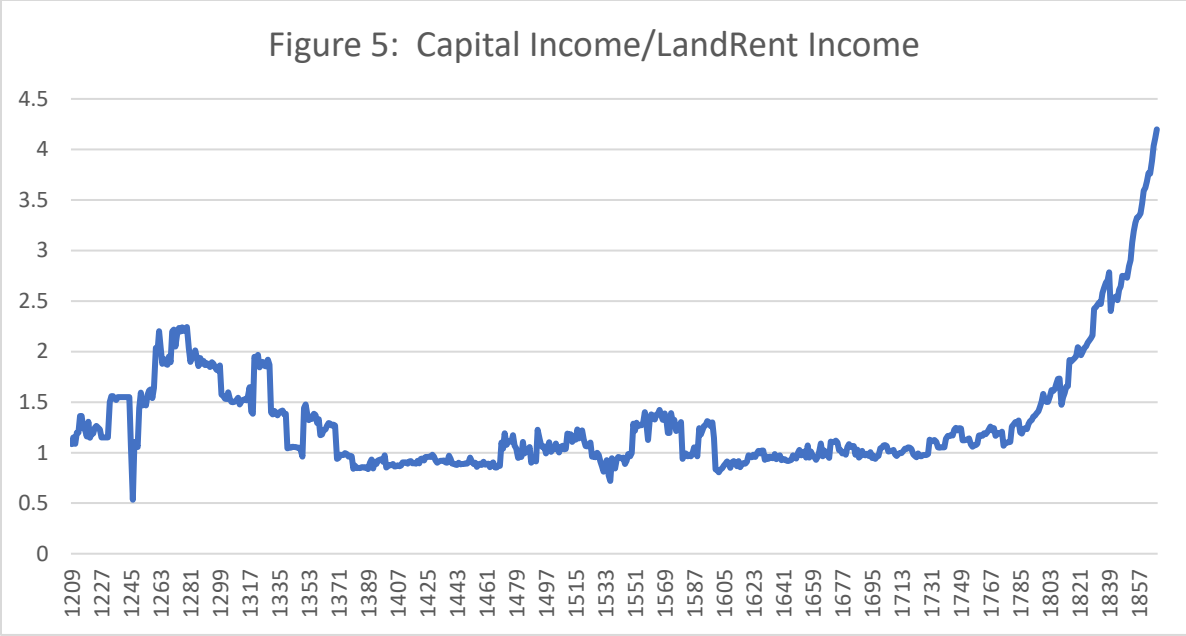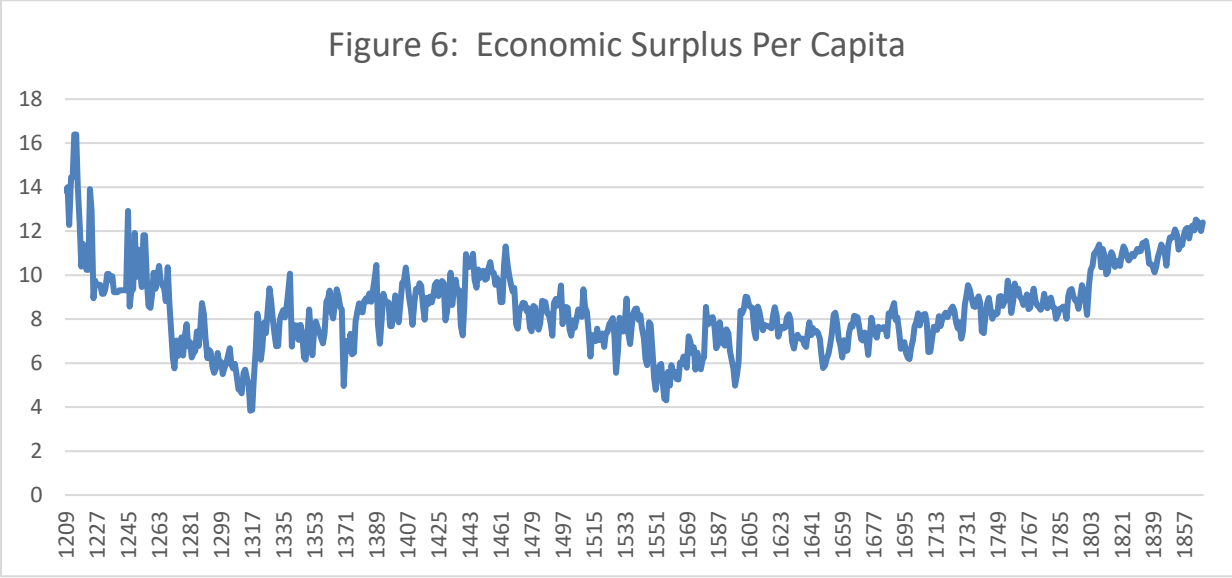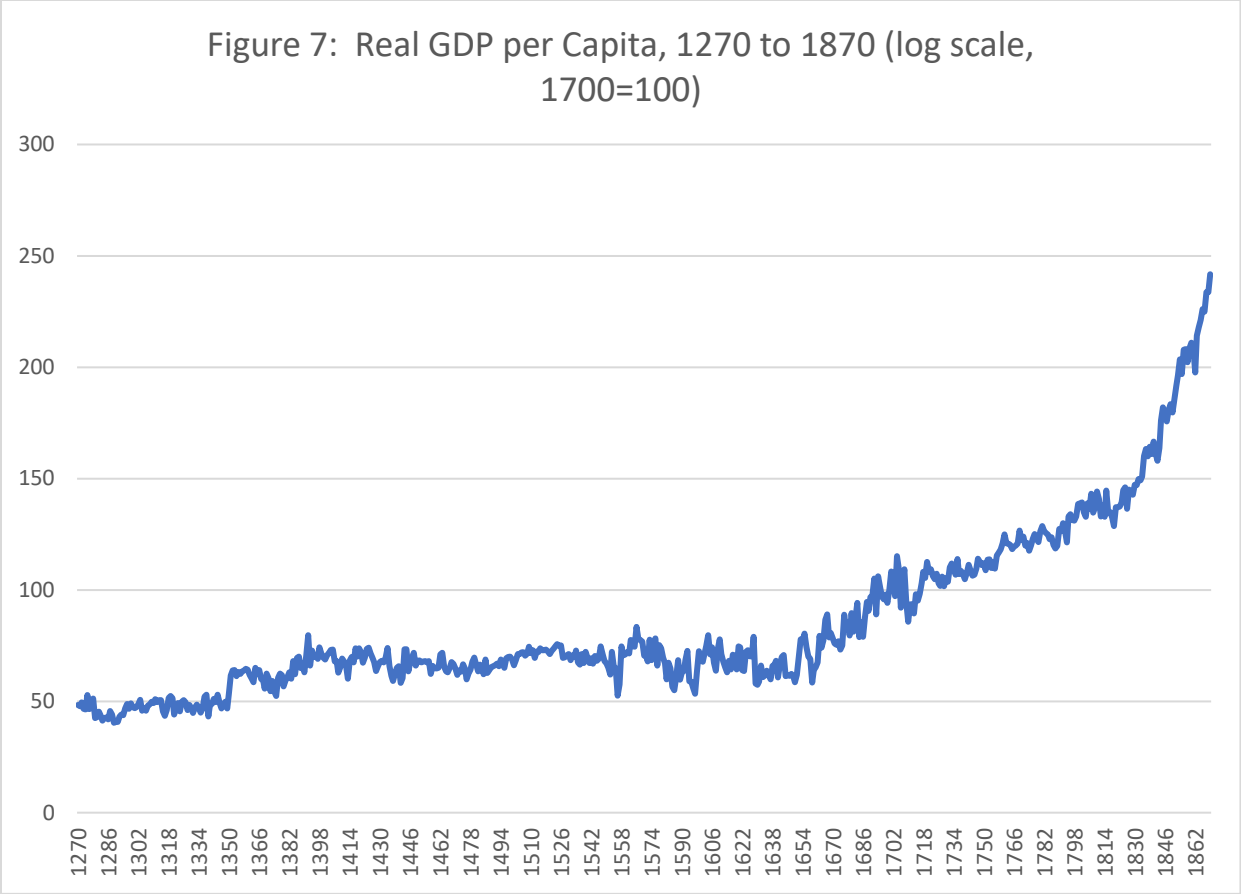
Source: Figure 1.5.06, Broadberry, S., Campbell, B., Klein, A., Overton, M., & Van Leeuwen, B. 2015. *British Economic Growth, 1270–1870*. Cambridge: Cambridge University Press. doi:10.1017/CBO9781107707603 .
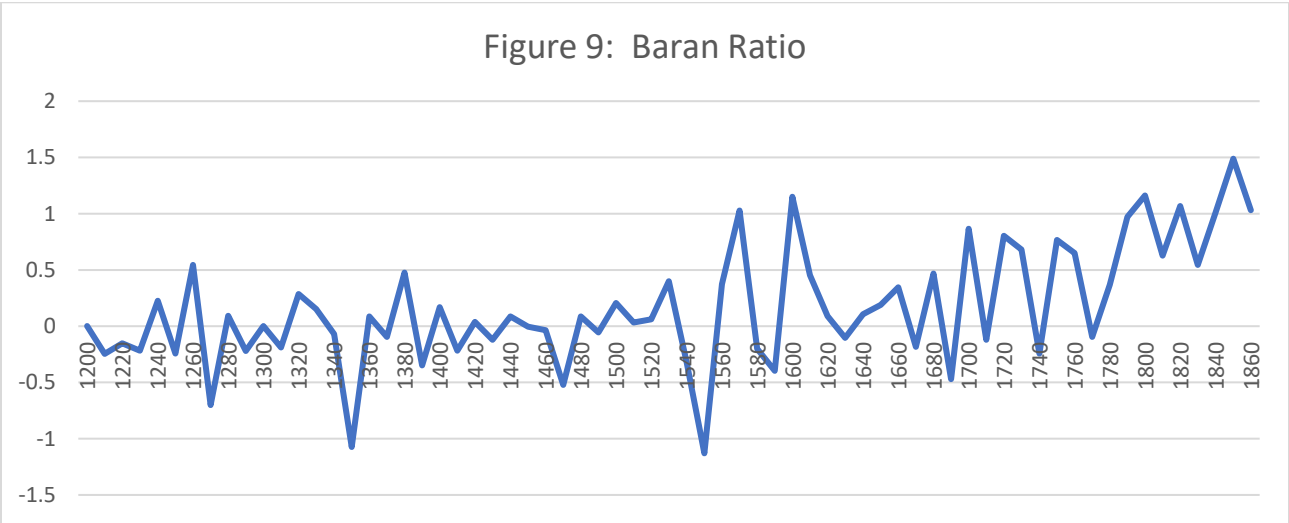
Table 1: Correlation Matrix for Annual Data

	Real GDP per Capita	Real Econ Surplus per Capita (1860s=100)	Real NNI per Capita (1860s=100)
Real GDP per Capita	1.000		
Real Econ Surplus per Capita (1860s=100)	0.677*	1.000	
Real NNI per Capita (1860s=100)	0.527*	0.855*	1.000

*p-value < 0.05

Dates examined are from 1270 to 1868.
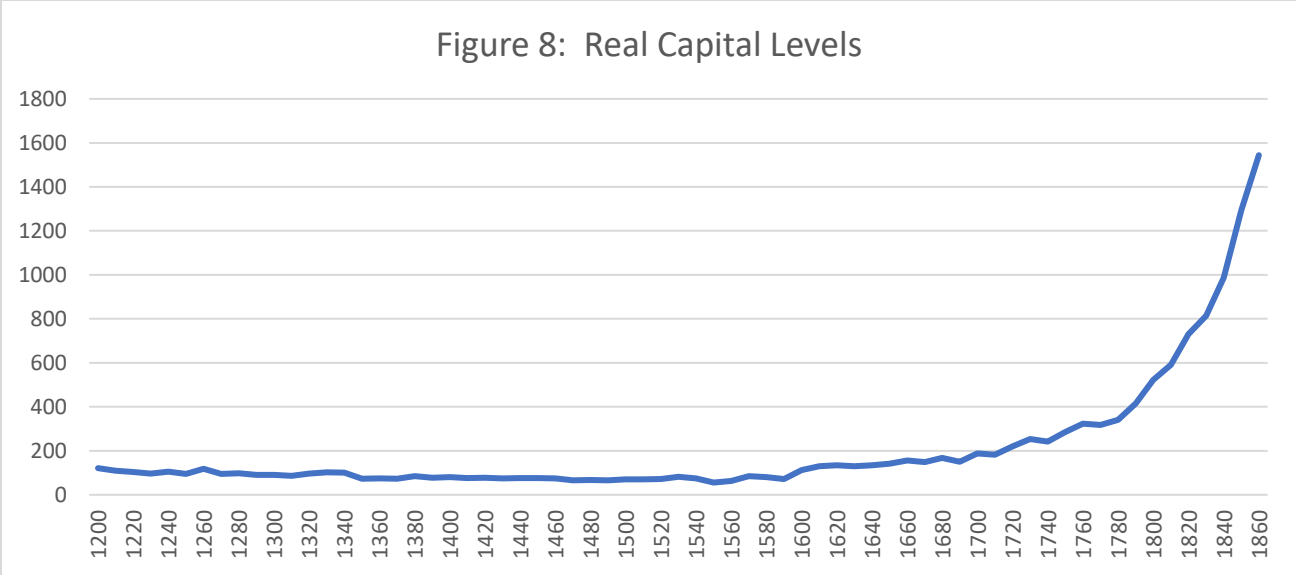
Figure 8: Real Capital Levels

Source: Author's representation of Clark (2009) data.
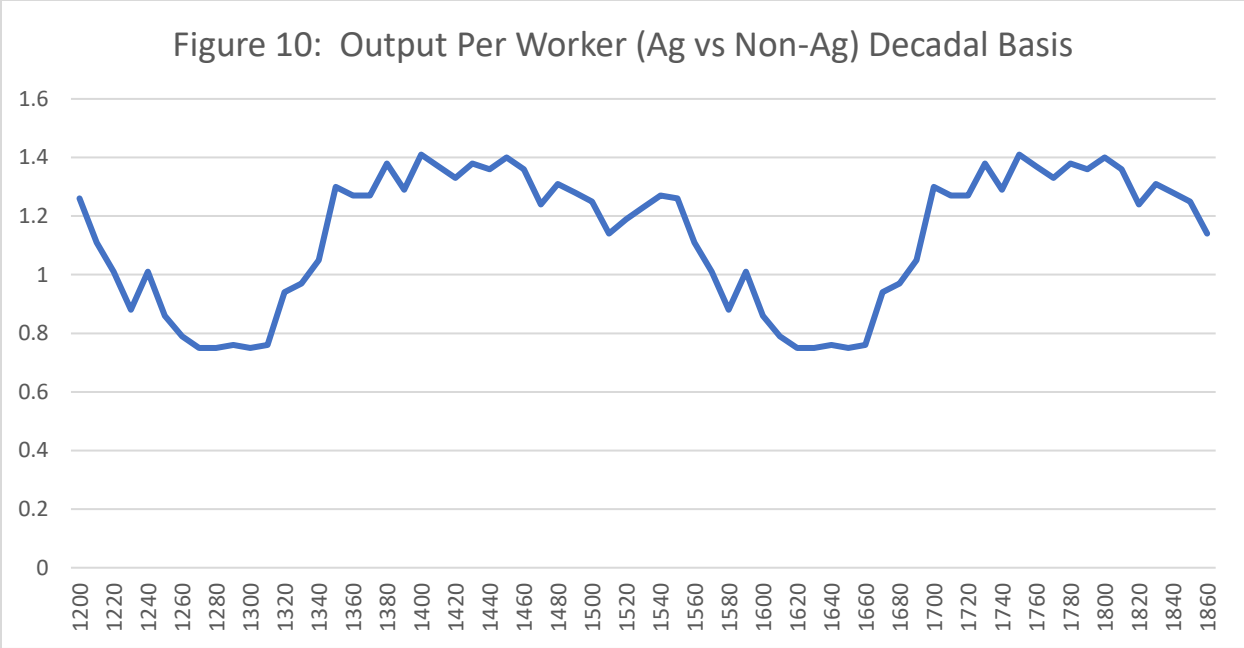

Figure 9: Baran Ratio

Source: Author's representation of Clark (2009) data.

Table 2: Correlation Matrix for Decadal Data

	Baran Ratio	Real Investment	Real NNI per Capita (1860s=100)
Baran Ratio	1		
Real Investment	0.74*	1	
Real NNI per Capita (1860s=100)	0.27*	0.47*	1

*p-value < 0.05

Dates examined are from 1270 to 1860 on a decadal basis.

Figure 10: Output Per Worker (Ag vs Non-Ag) Decadal Basis

Source: Author's representation of Clark (2009) data.
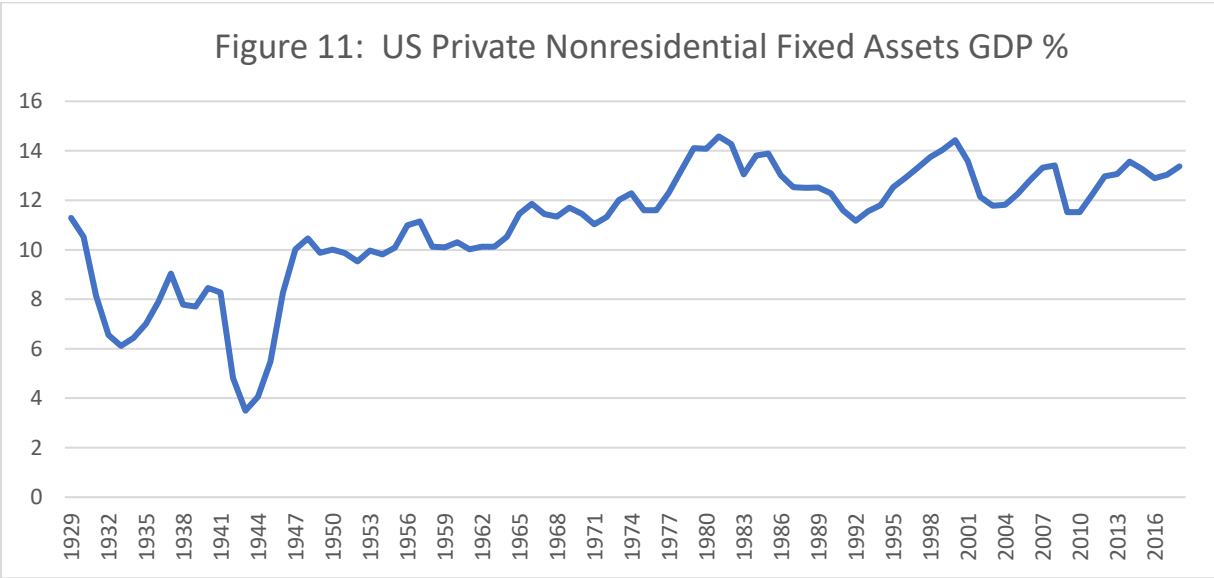
Figure 11: US Private Nonresidential Fixed Assets GDP %

Source: United States Bureau of Economic Analysis. https://apps.bea.gov/iTable/iTable.cfm?ReqID=10&step=2

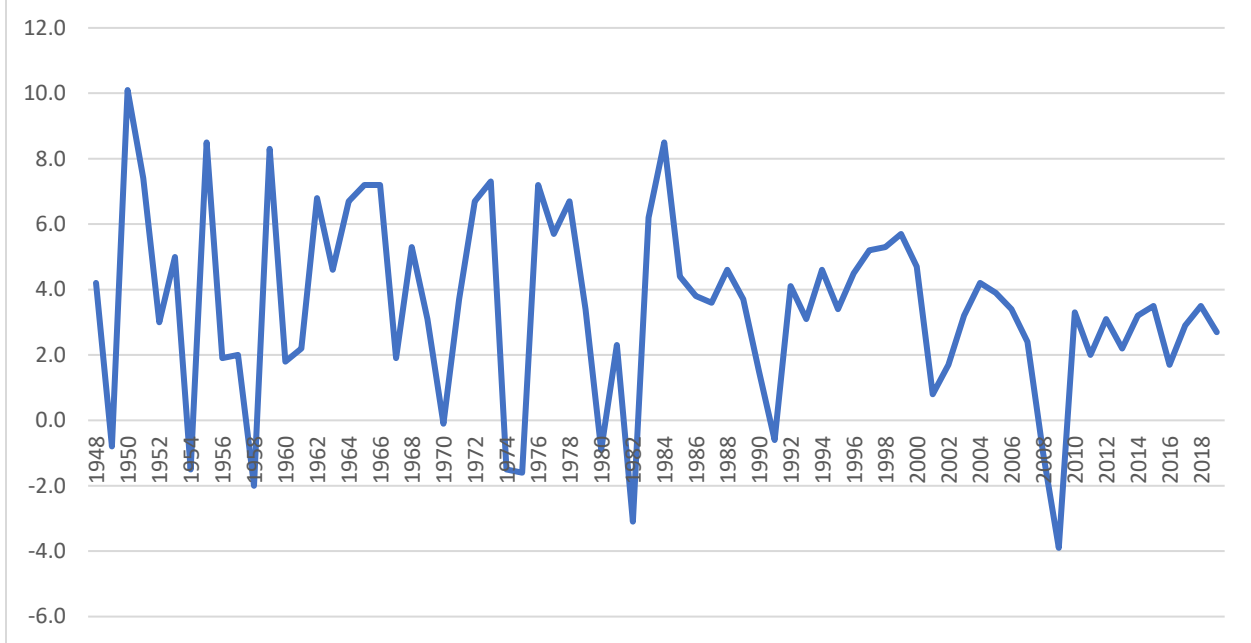Figure 12: US Nonresidential Gross Private Domestic Investment / GDP %

Source: United States Bureau of Economic Analysis.
https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey .

Figure 13: US Net Private Domestic Investment / GDP Pct

Source: United States Bureau of Economic Analysis.
https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey .
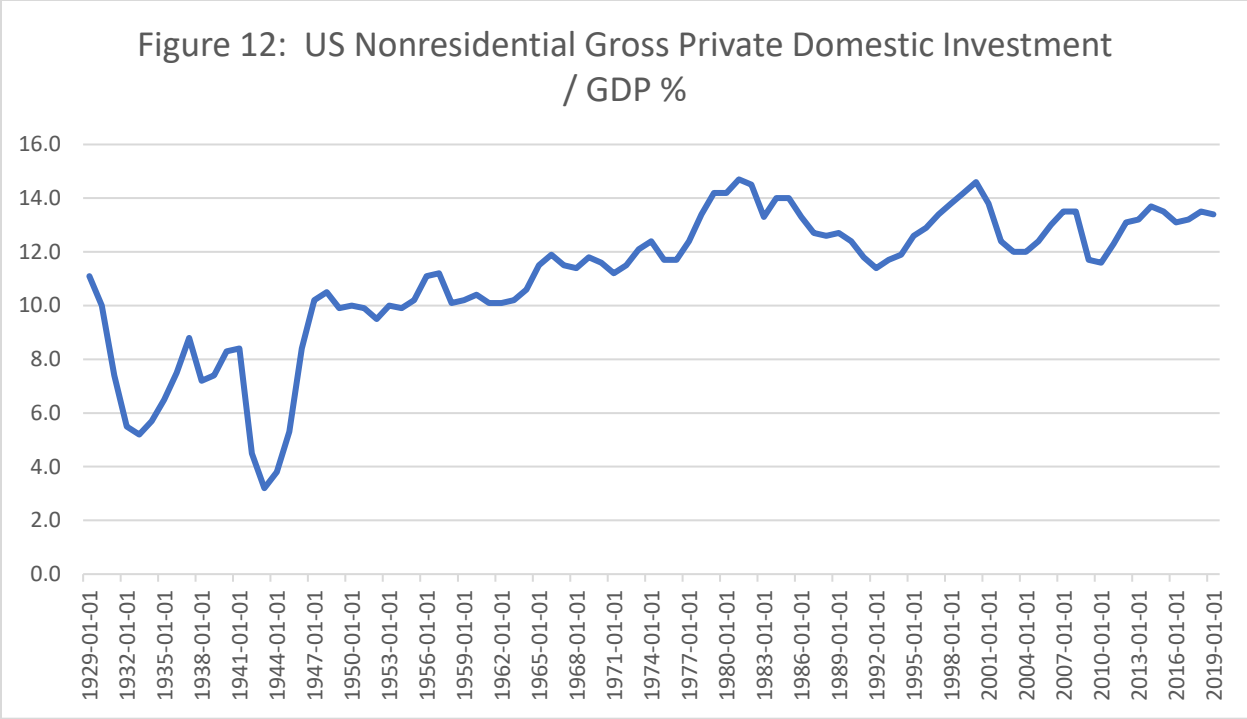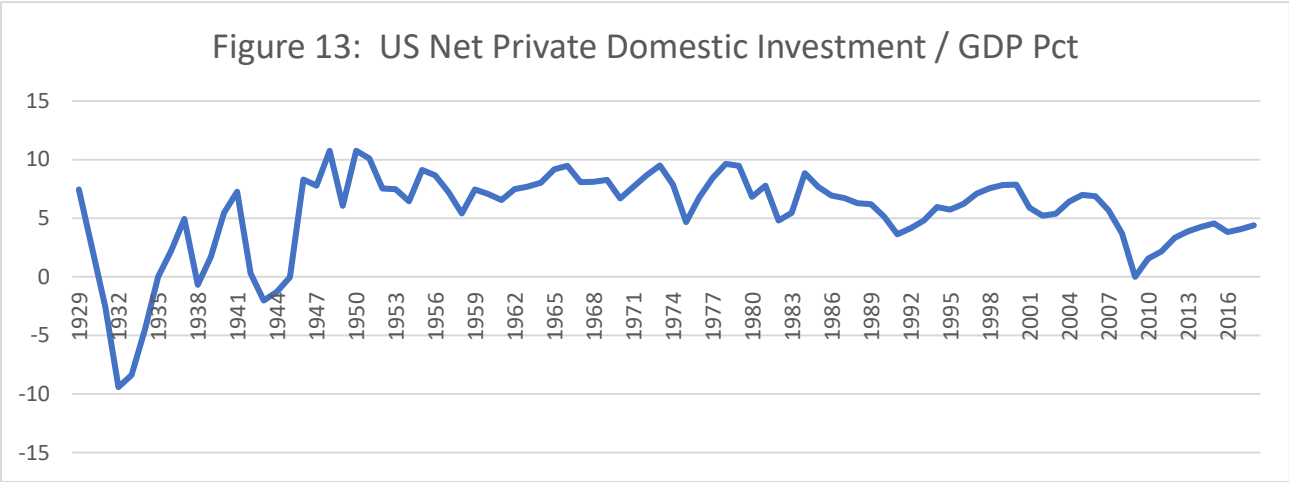
Figure 14: US Annual Change in Productivity, 1948 to 2019

Source: US Bureau of Labor Statistics, Annual Nonfarm Business Output per Worker, Percent change from same quarter a year ago. www.bls.gov