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Unproductive accumulation in the USA: a new analytical framework

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In this paper I offer an innovative analysis of unproductive accumulation in the US economy from 1947 to 2011. I develop a new theoretical and empirical framework to analyze the accumulation of capital in its productive and unproductive forms. I also develop a methodology to compute Marxist categories predicated on the idea that the production of knowledge and information is an unproductive activity that relies on the creation of knowledge-rents. In particular, I provide new empirical estimates to uncover the shifting balance between productive and unproductive forms of accumulation. The accumulation pattern observed during the 1947–79 phase that prioritized productive accumulation gave way after the 1980s to a contrasting pattern prioritizing unproductive accumulation. Unproductive activity has been growing at a fast pace in terms of incomes, fixed assets and employment. Among all forms of unproductive activity, my approach places special attention on how the production of knowledge and information has constituted a rising share of total unproductive income and capital stock. Additionally, productive stagnation and rapid unproductive accumulation have been related to greater exploitation of productive workers and to widening income inequality.

Key words: Unproductive activity, Capital accumulation, Exploitation, Inequality, Stagnation
JEL classifications: B51, E01, O34

1. Introduction

In this paper I conceptualize and measure the accumulation of unproductive capital in the postwar US economy. I focus on the shifting balance between productive and unproductive activity and the distribution of capital between these two categories. I develop a new methodology to compute Marxist categories and provide several empirical estimates of productive and unproductive forms of accumulation from 1947 to 2011. My methodology and results provide new evidence of how exploitation, inequality and unproductive accumulation interact in an advanced capitalist economy.

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I employ the term *unproductive accumulation* to indicate the growth in the flow of income or in the stock of capital of unproductive activities, and the term *productive accumulation* to indicate the growth in the flow of income or in the stock of capital of productive activities. The distinction between productive and unproductive relies directly on the concept of surplus value and, as such, is predicated on the idea that value needs to come from somewhere. In no way does unproductive mean unnecessary, or less important, and it is not a derogatory term. There is also no connection between productive and tangible, since services and intangible commodities can be the output of productive activities.

A *productive activity* is any economic activity that produces surplus value. To produce surplus value, an activity must have workers creating useful commodities with value for capital. Other activities comprising all efforts to create new use-values or recirculate existing use-values, but not commodities with surplus value, are considered to be *unproductive*. Unproductive activities create new use-values or recirculate existing use-values without adding any new surplus value to the economy. This implies that the incomes of unproductive activities represent flows drawn out of the value generated in productive activities. While productive activities create and also consume surplus value, unproductive activities only consume it.

Despite directly consuming the surplus from productive endeavors, unproductive accumulation can well enhance labor productivity or even boost aggregate demand in productive activities, and therefore indirectly improve the creation of surplus value. Hence, there is a double effect under consideration: unproductive activity might *indirectly* increase labor productivity and it might also increase demand for productive activity, while it draws on the value that it does not *directly* produce. Even though unproductive activities *indirectly* impact productive accumulation, they do not *directly* add any new surplus value to the economy.

Official income and product accounts and input-output matrices have to be translated to be used in a Marxist analysis since Marx developed his own system of concepts grounded on his unique understanding of the labor theory of value. Official data series, on the contrary, are constructed using concepts drawn from orthodox economics that conceptualize value in a different manner. In particular, official accounts do not distinguish between productive and unproductive activities.

To separate industries between productive and unproductive activities, I introduce the *Marxist Industry Classification System*, whose main feature is the treatment of knowledge production and knowledge ownership as unproductive activities. Besides trade, finance, insurance, real estate, non-profit organizations and government administration, I also classify as unproductive the production of software, data, pharmaceuticals, movies, recorded video and music and published materials such as books and journals. The *re*-production of knowledge and information requires no labor time and therefore produces neither value nor surplus value, implying that these activities must be classified as unproductive. My estimates reveal that knowledge creation and finance have been the fastest-growing unproductive activities both in terms of net income and capital stock.

The pattern of accumulation in the US economy has changed substantially throughout the postwar period. Prior to 1980 the USA experienced rapid productive accumulation, slower growth in unproductive fixed assets, non-increasing rates of exploitation of productive workers and low levels of inequality. Throughout the postwar period, workers gradually took on unproductive jobs, and by the early 1970s the majority of employees were already unproductive. After 1980 the situation changed dramatically and the economy shifted to faster unproductive accumulation and faster growth in the stock of unproductive

assets, and exhibited an ever-increasing rate of exploitation of productive workers and widening income inequality. The total income of unproductive activities quadrupled relative to the total value generated in productive activities during the 1947–2011 period.

The post-1980 Neoliberal phase of US capitalism has been characterized by the rising exploitation of productive workers, the shift of investments towards unproductive activities and increasing income inequality across classes. Capitalists have been extracting more surplus value from a diminishing portion of the working class at the same time the stock of fixed assets in unproductive activities has tripled relative to the productive capital stock. The result is that for the Neoliberal period the general profit rate has fallen substantially behind the rate of exploitation. I attribute the rapid pace of unproductive accumulation as the possible reason for the post-1980 disconnection between exploitation and profitability.

The paper is structured as follows: I first present my analytical approach and offer a comparison with previous studies. I then introduce a range of empirical estimates and discuss the potential causes and likely outcomes of unproductive accumulation in the USA. The main conclusion is that the observed trends, beyond their implications in terms of capital accumulation rates and class inequality, point to a deeper capitalist dynamic that Marx himself named the 'autonomization of value': the tendency of capital to create forms of wealth that are increasingly autonomized from the production of value and from the exploitation of productive labor.

2. Comparison with other approaches

The crucial difference between the approach introduced in this paper compared to other existing approaches is the treatment of knowledge and information production as unproductive activity. Predicated on Teixeira and Rotta (2012), my methodology is the only one that provides estimates of Marxist categories considering *knowledge and information as valueless commodities*. I do so by first differentiating production from *re*-production and then following Marx when positing that value is determined by the labor time necessary to *re*-produce a commodity. Commodified knowledge and information are valueless because they require labor to be originally produced but no labor to be further reproduced. The valueless character of knowledge and information as commodities is therefore a direct implication of Marx's value theory.

Because of competition with new technologies and new production conditions, produced values are continuously re-valued in the market. Values are not fixed magnitudes but changing quantities even if their production has already taken place in the past. The fact that Marx did not stress this point early on in *Capital I* is because at that level of analytical abstraction he had not yet introduced reproduction into his analysis, focusing only on the production of commodities. Once he introduced the reproduction of capital halfway through *Capital I*, Marx then shifted from production to reproduction conditions. He then explicitly claimed that in determining the value of any commodity, including *already existing* commodities, it is the *re*-production time that matters, not the original production time. Revaluations based on reproduction time affect the values of all commodities. In the three volumes of *Capital*, Marx repeatedly made the same point. In *Capital I*:

> [H]owever young and full of life the machine may be, its value is no longer determined by the necessary labour-time actually objectified in it, but by the labour-time necessary to reproduce either it or the better machine. It has therefore been devalued to a greater or lesser extent. (Marx, 1990, p. 528)

In *Capital II*:

> Just as with any other commodity, so in the case of labour-power, too, its value is determined by the amount of labour needed to reproduce it. […] wages are the value of the commodity labour-power, and the latter can be determined (like the value of any other commodity) by the labour needed for its reproduction. (Marx, 1992, pp. 458–59)

In *Capital III*, Marx commented on the 'the great difference in costs between the first construction of a new machine and its reproduction' (1994, p. 199), and then made it very clear that:

> Once machines, factory buildings or any other kind of fixed capital have reached a certain degree of maturity, so that they remain unchanged for a long while at least in their basic construction, a further devaluation takes place as a result of improvements in the methods of reproduction of this fixed capital. The value of machines, etc. now falls not because they are quickly supplanted or partially devalued by newer, more productive machines, etc., but because they can now be reproduced more cheaply. (Marx, 1994, p. 209)
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> The value of any commodity—and thus also of the commodities which capital consists of—is determined not by the necessary labour-time that it itself contains, but by the socially necessary labour-time required for its reproduction. This reproduction may differ from the conditions of its original production by taking place under easier or more difficult circumstances. (Marx, 1994, pp. 237–38)
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> [A] large part of the existing capital is always being more or less devalued in the course of the reproduction process, since the value of commodities is determined not by the labor-time originally taken by their production, but rather by the labor-time that their reproduction takes, and this steadily decreases as the social productivity of labor develops. (Marx, 1994, p. 522)

Commodified knowledge and information have no value and thus no surplus value; therefore, their production constitutes a type of unproductive activity. Even more, the owners of knowledge and information become *knowledge-lords* analogously to how we commonly refer to the owners of land as landlords. Workers laboring for knowledge-lords produce no value and hence no surplus value. If no surplus value creation takes place in the production of knowledge, and if certain capitalists become knowledge-lords due to the monopoly rights they possess over produced information, then all the profits knowledge-lords make are pure *knowledge-rents* (Teixeira and Rotta, 2012).

Even though the production of new knowledge does not generate surplus value, it does give rise to rents that allow knowledge-lords to appropriate a share of the surplus value produced in productive activities. Intellectual property rights and copyrights in general are meant to guarantee that the owners of information get a fraction of the surplus value produced elsewhere in the economy. Intellectual property rights have a similar economic role compared to land ownership rights, namely that they assure a flow of surplus value to unproductive capitalists in the form of rents. In the case of commodified knowledge, market prices are gross overestimations of its null value.

Albeit under a different value theory, the Political Economy notion that knowledge has *zero reproduction cost* appears in a similar way in mainstream economics as the *zero marginal cost* of knowledge (Arrow, 1962; Stiglitz, 1999; Duffy, 2004; Shavell and van Ypersele, 2001). Kenneth Arrow (1962) in his famous 'learning by doing' growth model paper noted that knowledge is inherently a public good with zero marginal cost, and therefore would not be supplied under perfect competition. Knowledge can only be produced for profit if supplied under imperfect competition and with state-sponsored intellectual property rights. Shavell and van Ypersele (2001, p. 545) noted subsequently that the zero marginal cost property applies to industries producing pharmaceuticals, software, movies, recorded music, books and visual products.

Despite potential indirect contributions to productive accumulation, knowledge creation and ownership produce no new value and should be classified as unproductive. With this key insight on the labor theory of value, I can then provide new measures and a new analysis of productive and unproductive forms of accumulation in the US economy.

The new methodology that I introduce thus provides estimates of unproductive accumulation in a broader way compared to current attempts to measure financialization (as in Lapavitsas, 2013; Lazonick, 2013; Davis, 2016; Arestis and Singh, 2010; Orhangazi, 2008; Krippner, 2005; Epstein, 2005). While the notion of financialization remains circumscribed to financial circuits of capital, the Political Economy notion of unproductive accumulation includes the idea of financialization and additionally considers that many other unproductive activities also draw on the value that productive workers generate.

The mainstream of the economics profession has nonetheless begun to embrace the idea that some forms of economic activity, named '*rent-seeking activities*', directly usurp productive wealth. The concept of 'rent seeking' identifies cases in which there is appropriation of uncompensated value from others with no contribution to productivity. The 'rent-seeking' and 'directly unproductive profit-seeking (DUP) activities' literature has been expanding (Krueger, 1974; Stiglitz, 2012; Colander, 1984; Bhagwati, 1982), and it clearly refers to the concept of rent in classical Political Economy, particularly in Adam Smith and David Ricardo.

In the heterodox economics tradition, the role of rentier activities has a long track record that also dates back to the original insights from classical Political Economy. More recent approaches (Bezemer and Hudson, 2016; Bezemer *et al.*, 2014; Hudson and Bezemer, 2012; Hudson, 2014, 2015; Epstein, 2005) have broadened the perspective by including empirical estimates of the adverse impacts of rentier incomes on productive activities. The role of economic rents as a cause of income inequality and stagnation has also gained substantial traction in sociology (Lin and Tomaskovic-Devey, 2013; Tomaskovic-Devey and Lin, 2011).

The methodology that I develop builds on and extends the groundbreaking works of Shaikh and Tonak (1994) and Edward Wolff (1987), and includes more recent insights from the works of Mohun (2016, 2014, 2006, 2005), Paitaridis and Tsoulfidis (2012) and Moseley (1997, 1992, 1985). In this paper I develop a broad range of empirical indicators of productive and unproductive forms of accumulation in terms of gross and net incomes, employment, labor compensation and fixed assets. Unlike previous studies, my estimates feature the production and ownership of knowledge and information as forms of unproductive activity. I also present a breakdown of the inner components of unproductive accumulation and a comparison between estimates that include and exclude government incomes and assets. In the Appendix I provide a detailed description of data sources as well as a step-by-step explanation of how I computed Marxist categories from available data for the USA between 1947 and 2011.

3. Estimating Marxist categories

Marxist Political Economy has a unique class theory of the production, appropriation and distribution of surplus value, and therefore estimates of these categories provide a diagnosis of capitalism that differs substantially from more mainstream economic analyses. From the Marxist point of view, the official measures of gross and net outputs

(such as GDP) contain systematic double counting of values and so constitute artificially inflated indicators of outputs and incomes.

Virtually every enterprise operates with a mix of productive and unproductive activities, with few firms actually being classified as purely productive or purely unproductive. For this reason I do not employ the term unproductive *sector* but rather unproductive *activity*. The purpose is to make clear that productive and unproductive endeavors are not separated into sectors but in fact into activities.

The value of any commodity (λ_i) can be decomposed into the indirect and direct labor necessary to reproduce it. Indirect or past labor appears through the use of means of production, while direct or current labor appears through the employment of labor power. Indirect labor contributes to the value of a new commodity because the means of production used up are themselves commodities and therefore products of past human labor. The direct labor applied adds more value and, eventually, a surplus value (S_i) over and above that required to reproduce labor power as a commodity. The value of every commodity (λ_i) can thus be decomposed into the value transferred from the means of production used up, called constant capital (C_i), and the new value added by direct labor (VA_i). The constant capital C_i comprises the value transferred from circulating constant capital (the inputs consumed all at once) and the value transferred from fixed constant capital (the inputs that gradually transfer their value over multiple production turnovers). Constant capital is therefore the sum of the raw materials and inputs immediately consumed plus the depreciation of productive fixed capital.

The direct labor applied (VA_i) can then be further decomposed into the value necessary to reproduce the laborers, called variable capital (V_i), and the extra value that workers produce but do not receive, named surplus value (S_i). The ratio of the realized surplus value to the variable capital spent to produce the surplus is the realized rate of surplus value ($s_i = S_i / V_i$), or the rate of exploitation of productive workers, an index of how much productive workers '*pay to work*'. Hence:

$$\lambda_i = C_i + VA_i = C_i + V_i + S_i = C_i + V_i\left(1 + s_i\right) \tag{1}$$

To arrive at the total value (TV) realized in an economy, we sum the realized values of all n commodities. The total value is thus the sum of all constant capital used up $(C = \sum_{i=1}^{n} C_i)$, all the variable capital used up $(V = \sum_{i=1}^{n} V_i)$ and all the surplus value $(S = \sum_{i=1}^{n} S_i)$ realized. The constant capital C reflects all the productive inputs used up when producing the value of all commodities, or simply all the past indirect productive labor transferred to current productive output. The sum of variable capital and surplus is the total Marxist value added $(VA = \sum_{i=1}^{n} VA_i)$ in the economy, and it reflects all the direct productive labor employed. Letting $s = S / V$ denote the economy-wide average rate of surplus value, we now have:

$$TV = \sum_{i=1}^{n} \lambda_i = C + VA = C + V + S = C + V\left(1 + s\right) \tag{2}$$

The total value TV measures the realized values of all n commodities in an economy. It is a gross measure of productive output since it includes the value transferred from the inputs. When we net out the value of constant capital C, we arrive at the Marxist value added (VA) measure. The direct productive inputs consumed and the depreciation of productive fixed capital are both included in the measure of C, implying that the Marxist value added is both net of productive inputs used up and net of depreciation. The surplus value S is the residual that we obtain after subtracting from VA the value of the labor power of productive workers (V).

The constant capital C includes only inputs used up in productive activities that were themselves produced by productive labor. Inputs produced in unproductive activities that are then used up in productive activities are not included in the measurement of C, even if they were purchased at a positive price. For example, payments for land (landrents) are not included in C. The same reasoning applies to the value of labor power, since the measure of variable capital V includes only the compensation of productive workers in productive activities. Unproductive workers in productive activities (such as supervisory employees) and all the workers in unproductive activities do not enter into the computation of V. Surplus value S is the new value that is then consumed to maintain all those activities that were excluded from the estimate of value added.

The economy-wide general profit rate (r) is simply the total surplus value realized relative to the total capital stock (K) employed in the economy: $r = \frac{S}{K}$. The organic composition of capital (OCC) can be computed as the stock of productive capital relative to variable capital. The stock of productive capital is the stock of fixed assets in productive activities (K_{PA}), hence: $OCC = \frac{K_{PA}}{V}$. The total stock of fixed assets in the economy comprises the fixed capital stock in productive (PA) and unproductive activities (UA), hence: $K = K_{PA} + K_{UA}$. Using $s = S / V$ as the economy-wide average rate of surplus value and $OCC = \frac{K_{PA}}{V}$ as the organic composition of capital, it then becomes possible to rewrite the equation for the general profit rate as:

$$r = \frac{S}{K} = \frac{S}{K_{PA} + K_{UA}} = \frac{\frac{S}{V}}{\frac{K_{PA}}{V} + \frac{K_{UA}}{V}} = \frac{s}{OCC + UCC} \tag{3}$$

The new category that I introduce is the *unproductive composition of capital*: $UCC = \frac{K_{UA}}{V}$. The UCC captures the relationship between the accumulation of unproductive capital stock and the variable capital representing the workers generating surplus value in productive activities. It thus becomes evident that the general profit rate can rise if the rate of surplus value is rising, and it can fall if either the OCC or the UCC is rising, all else held constant. The profit rate falls if the rise in the rate of exploitation is not rapid enough to compensate for the effect of a rising unproductive composition of capital.

I also compute an alternative net profit rate (r') of productive activities by deducting the share of the surplus that covers the total compensation of unproductive employees (W_{UA}). W_{UA} includes the compensation of all supervisory and non-supervisory employees in unproductive activities plus the supervisory employees in productive activities.

By subtracting W_{UA} from the surplus value, and computing it relative to the productive capital stock only, we arrive at a net measure of average profitability in productive activities:

$$r' = \frac{\Pi}{K_{PA}} = \frac{S - W_{UA}}{K_{PA}} = \frac{\frac{S}{V} - \frac{W_{UA}}{V}}{\frac{K_{PA}}{V}} = \frac{s - \frac{W_{UA}}{V}}{OCC} \quad (4)$$

Analogous to the total value TV and value added VA of productive activities, it is possible to compute corresponding measures for unproductive activities. The corresponding measure to TV is the *gross income of unproductive activities* (GI_{UA}), and the corresponding measure to VA is the *net income of unproductive activities* (NI_{UA}). The difference between GI_{UA} and NI_{UA} is that the net measure excludes the intermediate inputs and the depreciation of unproductive fixed capital that are included in the gross measure of unproductive income.

Two other categories that I introduce capture the relative magnitude of unproductive to productive flows of income. The first is the *net unproductive burden* (NUB), estimated as the ratio of the net income of unproductive activities to the surplus value generated in productive activities: $NUB = \frac{NI_{UA}}{S}$. The second is the *gross unproductive burden* (GUB), estimated as the ratio of the gross income of unproductive activities to the total value generated in productive activities: $GUB = \frac{GI_{UA}}{TV}$. The UCC, NUB, GUB and the $\frac{W_{UA}}{V}$ ratio are thus four different ways of measuring the size and pace of unproductive accumulation relative to that of its productive counterpart.

The US economy is a concrete heterogeneous *social formation* comprising different *modes of production* that co-exist side by side. Prior to measuring wages, incomes and stocks of fixed assets, it is necessary to identify what belongs to the productive side of the capitalist mode of production, what belongs to its unproductive side and what belongs to other non-capitalist modes of production. On the unproductive side, besides including the production of knowledge and information, I have also included government incomes and government fixed assets. Even though not necessarily producing commodities for profit, the state does integrate a productive capitalist system that continuously depends upon it for generating effective demand and even for entrepreneurial endeavors (Mazzucato, 2013). For comparison, I present estimates of key variables in two versions: with and without government wages, incomes and fixed assets. Despite its great importance in Marxist measures of unproductive accumulation, state participation changes the levels of the estimates but not their long-run trends.

In my treatment of the government as a capitalist unproductive entity, I therefore follow Shaikh and Tonak (1994, pp. 71–72, 137, 212–13, 223, and 344). Mohun (2014, 2006,2005) and Paitaridis and Tsoulfidis (2012), on the contrary, do not include state incomes, wages or assets in their computations. As is standard in the literature, I classify household labor not hired for capital as a non-capitalist activity, I include the self-employed as part of the working class, and I focus on GDP instead

of GNP. Further theoretical discussions on modes of production and how they impact the estimates are included in the Appendix.

The first step to transform official national accounts data into Marxist categories is to classify and separate the different industries into new groups that actually reflect Marxist theory. The industry classification scheme associated with Marxist theory is what I would like to call the *Marxist Industry Classification System* (MICS). In contrast to the official North-American Industry Classification System (NAICS) and the Standard Industry Classification (SIC), the MICS posits that the value created in productive activities cannot be recounted in unproductive activities. The MICS has only three industry groupings, meant to adjust the official SIC and NAICS so as to allow for the proper estimation of Marxist categories:

(i) *Productive activities* (PA): Includes all commodity-producing activities generating surplus value. Agriculture, mining, manufacturing, transportation, construction, maintenance and productive government enterprises are counted here. Only productive services are counted.
(ii) *Trade, rental and leasing* (TRL): Includes retail trade, wholesale trade, rental of equipment and leasing of commodities. Retail and wholesale industries contain trade margins only, and the rental of equipment and leasing of commodities imply that values are being realized via piecemeal sales. However, the rentals of use-values that contain no value (such as land and information) are not counted here.
(iii) *Unproductive activities* (UA): Accounts for all activities that either create new or re-circulate existing use-values without generating any new surplus value. Included here are real estate (land-rents), finance, insurance, legal services, non-profit entities, government administration and the knowledge-rents in advertising, pharmaceuticals, software production, data management, research and development, publishing, music recording and movie production.

It is necessary to separate trade from unproductive activities because the input-output system that the BEA has developed is cast in producer's prices, with trade margins recorded in the retail and wholesale industries. If the official accounts were cast in final selling prices (purchaser's price), then trade would be directly incorporated into the unproductive activities groups, but since trade margins are recoded in their own rows and columns it becomes necessary to first distinguish them from both productive and unproductive activities. To estimate the measure of total value TV, we then have to combine the incomes recorded under the productive activities (PA) grouping with the trade and rental margins recorded under the trade, rental and leasing (TRL) grouping.

4. Historical trends in the US economy

In this section, I present a range of empirical indicators for productive and unproductive forms of accumulation in the postwar US economy. The estimates capture the different dimensions of unproductive accumulation in terms of incomes, fixed assets and employment. These measures also show how unproductive activity relates to exploitation, inequality, profitability and productive stagnation. In the conclusion, I then discuss the causes and implications of the observed trends.

4.1 Exploitation, inequality and unproductive activity

I begin my evaluation of the US economy by plotting in Figure 1 key Marxist measures together with their official counterparts from the Bureau of Economic Analysis (BEA). All series are nominal in millions of dollars. I compare the BEA measure of gross output with Marxist total value, indicating that the gap between the two series is due to the double counting of values in unproductive activities. I additionally compare

the BEA measure of GDP with my estimate of the Marxist value added, also indicating that the gap between the two series is due to the double counting of value added in unproductive activities. I additionally plot my estimate of surplus value. The comparisons make clear how from a Marxist perspective the BEA artificially inflates its official annual measures of income and output by counting produced values more than once. Netting out unproductive activities from the measures of value creation makes a significant difference.

In Figure 2 I plot my estimate for the rate of surplus value in the USA from 1947 to 2011 together with the profit-wage ratio. The rate of surplus value, which is the rate of exploitation of productive workers in productive activities, was roughly stable during the 'Golden

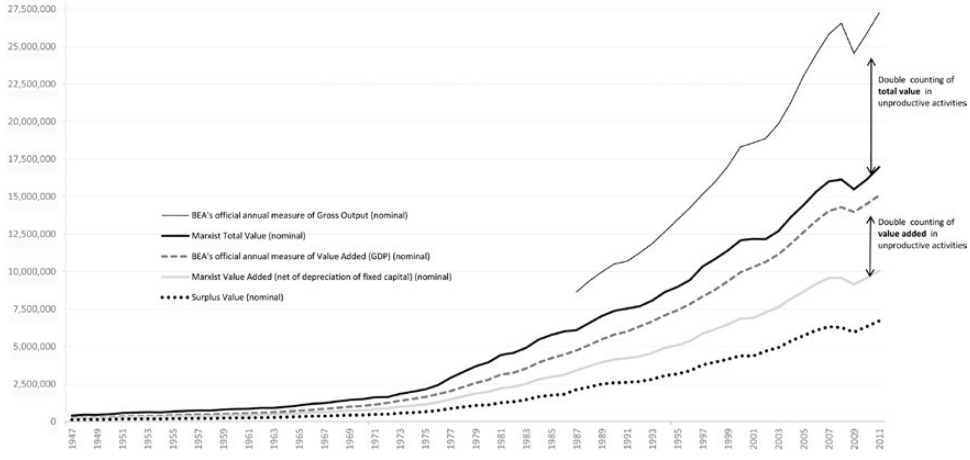

Fig. 1. *Marxist categories and official measures of output (1947–2011)—millions of dollars.* *Source:* Author's calculations and BEA. All figures are nominal in millions of US dollars.

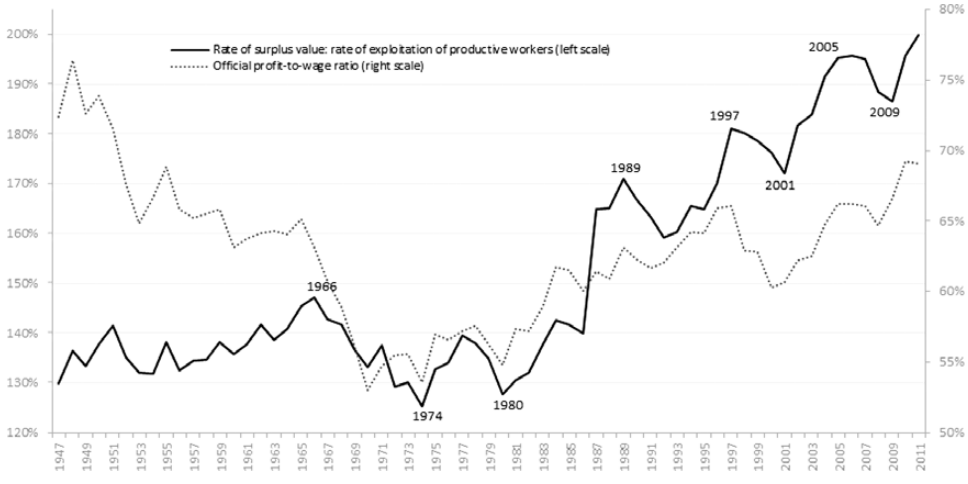

Fig. 2. *Rate of surplus value and profit-wage ratio (1947–2011).* *Source:* Author's calculations and BEA.

Age' from 1947 to 1966, implying that productive workers were exploited roughly at the same rate every year. Possibly due to labor militancy and low levels of unemployment, capitalists could not extract surplus value from workers at an increasing rate. From 1966 to 1980, the 'crisis of Keynesianism' period, the rate of surplus value dropped sharply. Possibly due to international competition with European and Japanese capitalists in global markets and to labor militancy at home, the surplus of the capitalist class was indeed squeezed. The Neoliberal period beginning in the early 1980s then produced a sharp recovery of the rate of exploitation. By the end of the 1980s, it had significantly surpassed its previous peak in 1966. Possibly due to the erosion of workers' bargaining power and increased competition in labor markets, the rate of surplus value continued to rise to unprecedented levels in the entire postwar period. Rising from a low point of 125% in 1974, it reached 200% in 2011. This implies that in 2011 productive workers labored one-third of the time for themselves and two-thirds of the time for the capitalists.

The rate of surplus value functions as an index of class struggle and indicates who has the margin of victory across different historical phases. The trends in the rate of exploitation of productive workers correspond to three different phases of postwar US capitalism. First, the Golden Age aligns with the years featuring a constant rate of exploitation (1947–66). Second, the crisis of Keynesianism occurs when a falling rate of exploitation puts a squeeze on capitalists (1967–79), suggesting that it was initially a crisis for capitalists which was transformed afterwards into a crisis for workers. The Neoliberal era then matches with a sustained increase in exploitation to record levels (1980–2011), suggesting that Neoliberalism is a class project of squeezing the compensation of productive workers to the benefit of the capitalist class (as in Harvey, 2005; and Kotz, 2015).

The comparison with the profit-wage ratio available from the official BEA income accounts shows that it is not a good proxy for the rate of exploitation. The profit-wage ratio misrepresents both the level and trend of the rate of surplus value because it ignores the productive-unproductive distinction present in Marxist theory.

In Figure 3 I plot my estimate of the rate of exploitation together with that from Shaikh and Tonak (1994). Not only is the level of the rate of surplus value different,

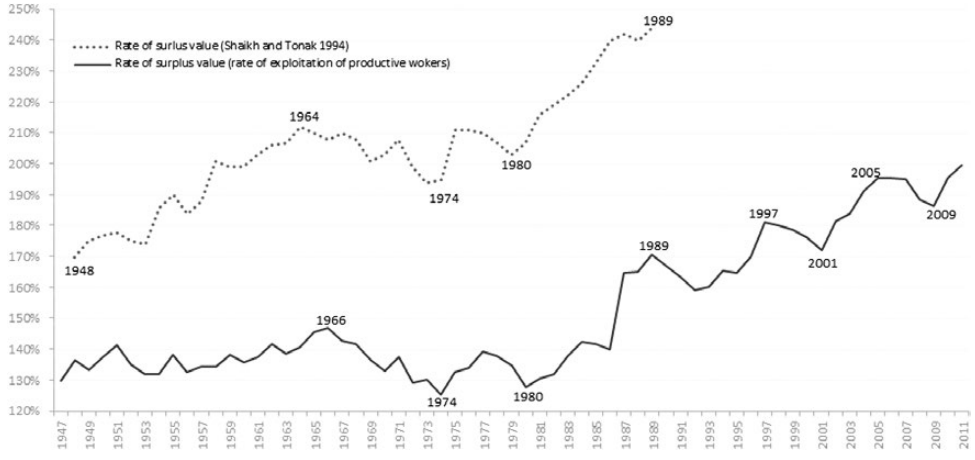

Fig. 3. *Comparison between rates of surplus value (1947–2011).*
Source: Author's calculations; Shaikh and Tonak (1994).

but also its trend. In contrast to my approach, Shaikh and Tonak classify all activities related to knowledge and information production as productive of surplus value, and they deduct supervisory workers from self-employed persons in productive activities. Other technical differences in estimation methods are explained in detail in the Appendix.

For Marx, a crucial cause of inequality is exploitation, or simply 'how much workers *pay* to work'. To show how this relationship manifests in the postwar USA, I plot in Figure 4 my estimate of the rate of exploitation together with the top 0.1% income share (excluding capital gains) from Piketty (2014) and Alvaredo *et al.* (2014). The similarity of trends is remarkable. The correspondence is all the more striking given that I estimate Marxist categories from input-output matrices while Piketty (2014) computes personal income inequality from IRS tax-unit data. The very high correlation between exploitation and inequality also holds if I use instead either the top 1% income share or the inverted Pareto-Lorenz inequality measure.

In Table 1 I provide further evidence of how my methodology can improve our understanding of the relationship among exploitation, inequality and unproductive activity. I compute the correlation coefficients between my estimates of the rate of exploitation, Shaikh and Tonak's (1994) exploitation estimates, the official profit-wage ratio from the BEA and Piketty's (2014) measures of income inequality for the US economy. The correlation coefficient between my estimate of exploitation and Piketty's top 1% income share is 0.95; 0.96 for the top 0.1% income share; and 0.94 for the inverted Pareto-Lorenz inequality coefficient. Correlation surely does not imply causality, but all measures are very close to unity. If we use instead Shaikh and Tonak's (1994) estimates, we arrive at only 0.05, 0.26 and 0.45, respectively. If I truncate my estimates to stop in 1989, when Shaikh and Tonak's dataset ends, I still arrive at correlation coefficients between exploitation and inequality that are substantially higher. If we use the profit-wage ratio computed from the official BEA data, the correlations with Piketty's measures of inequality are also significantly lower than my estimates.

Since inequality is a different measure from exploitation in various ways, one would not expect the movements of the rate of exploitation to entirely explain movements

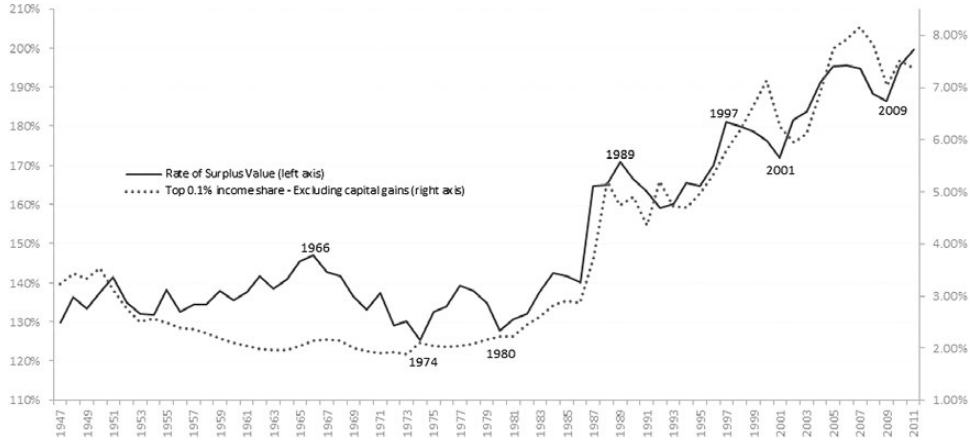

Fig. 4. *Rate of exploitation and top 0.1% income share (1947–2011).*
Source: Author's calculations; Piketty (2014); Alvaredo *et al.* (2014).

Table 1. *Exploitation and inequality in the USA—correlations (1947–2011)*

	Correlation
Rate of surplus value and top 1% income share—1947 to 2011	0.95
Rate of surplus value and top 0.1% income share—1947 to 2011	0.96
Rate of surplus value and inverted Pareto-Lorenz coefficient—1947 to 2011	0.94
Rate of surplus value (Shaik and Tonak 1994) and Top 1% income share—1948 to 1989	0.05
Rate of surplus value (Shaik and Tonak 1994) and Top 0.1% income share—1948 to 1989	0.26
Rate of surplus value (Shaik and Tonak 1994) and Inverted Pareto-Lorenz coef.—1948 to 1989	0.45
Rate of surplus value and top 1% income share—1948 to 1989	0.63
Rate of surplus value and top 0.1% income share—1948 to 1989	0.71
Rate of surplus value and inverted Pareto-Lorenz coefficient—1948 to 1989	0.70
Profit-wage ratio (from BEA) and top 1% income share—1947 to 2011	0.41
Profit-wage ratio (from BEA) and top 0.1% income share—1947 to 2011	0.34
Profit-wage ratio (from BEA) and inverted Pareto-Lorenz coefficient—1947 to 2011	0.29

Source: Author's calculations; Shaikh and Tonak (1994); Piketty (2014); Alvaredo *et al.* (2014); and BEA.

of inequality. The rate of exploitation is computed from the functional distribution of income between productive workers and the surplus income that productive capitalists appropriate. Inequality is instead computed from the personal distribution of income across tax-units, whether or not they are attached to productive activities. Despite the differences between the two measures, it is striking that the rate of exploitation is so closely correlated with the income share of the super-rich. This high correlation suggests that the rate of exploitation may be a major determinant of the degree of inequality.

4.2 The magnitude of unproductive accumulation

Marxist theory posits that unproductive activity survives by consuming the value that productive activities generate. To better understand the magnitude of unproductive accumulation, I plot in Figure 5 three different measures of unproductive accumulation, as annual flows net of depreciation, relative to their productive analogues. The net income of unproductive activities relative to the surplus value generated in productive activities (the net unproductive burden, NUB) rises from a low point at 24.4% in 1948 to a peak at 78% in 2009, a rise of 220% in the period. The gross income of unproductive activities relative to the total value generated in productive activities (gross unproductive burden, GUB) rises from a low point at 13.4% in 1948 to a peak at 53.6% in 2009, hence quadrupling over the same period. The net income of unproductive activities relative to the value added in productive activities rises from 14.1% in 1948 to 50.8% in 2009, a total rise of 260%. In terms of aggregate flows of income, these estimates offer strong evidence of the rapid pace of unproductive accumulation in the postwar US economy.

In Figure 6 I further decompose the net income of unproductive activities $\left(NI_{UA}\right)$ into the shares of five unproductive sub-categories: (i) government administration with the exception of productive government enterprises, consisting mostly of the

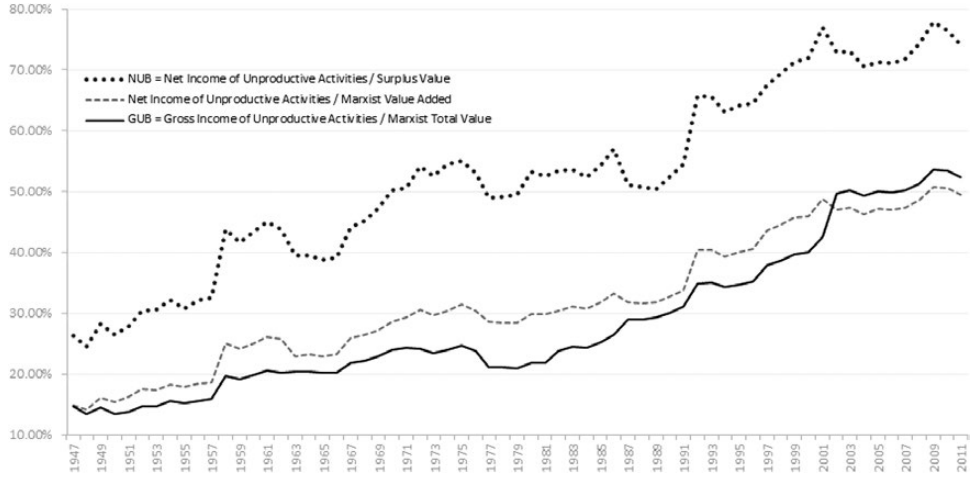

Fig. 5. *Relative measures of unproductive accumulation (1947–2011).*
Source: Author's calculations.

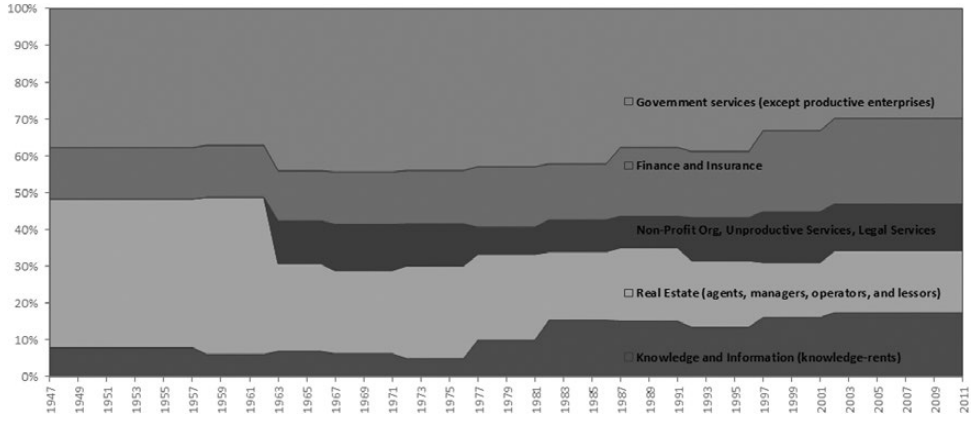

Fig. 6. *Decomposition of the net income of unproductive activities (1947–2011).*
Source: Author's calculations.

government wage bill at all levels; (ii) finance and insurance; (iii) non-profit organizations and unproductive services, such as legal services and corporate management; (iv) real estate, comprising land-rents accruing to agents, managers, operators and lessors (imputed owner-occupied rents are excluded); and (v) knowledge and information rents, comprising all net incomes from activities involving advertising, pharmaceuticals, software production, data management, research and development, publishing industries, sound recording and movie production.

There is substantial growth in the shares of finance and insurance from 14% to 23.2%, and also in knowledge and information rents from 7.9% to 17.4%. Finance and knowledge-rents combined have risen from 21.9% to 40.5% of the net income of all unproductive activity, hence nearly doubling in the postwar period. The share of government administration has shrunk from 37.7% to 29.9%, while the real estate sector has also shrunk from 23.8% in 1963 (when we began to have better real estate

input-output data) to 16.8% in 2011. The share of non-profit, legal and corporate management services remained somewhat stable at around 11% since 1963 (when we also began to have better input-output data for these services).

Unproductive accumulation has its effect not only on value distribution but also on employment. Since the early 1970s the employment of unproductive employees has surpassed its productive counterpart. In Figure 7 I plot the number of productive and unproductive employees as shares of total employment. Productive workers are nonsupervisory workers in productive activities, and unproductive employees comprise supervisory employees in productive activities plus all employees in unproductive activities. The share of unproductive employment rises from 43% in 1947 to 56% in 2011, while the complementary share of productive workers drops from 57% in 1947 to 44% in 2011.

In Figure 8 I plot the ratio of unproductive to productive employees together with the ratio of unproductive to productive compensation ($\frac{W_{UA}}{V}$). Up to 1986 the two series evolve closely with similar trends but move apart thereafter, as unproductive labor compensation begins to increase faster than the increase in unproductive employment. Albeit using a different methodology, Mohun (2014, 2006) offers a decomposition of these two trends to reveal that the main culprit for the widening gap between compensation and employment after 1986 is the fast rise in wage inequality between supervisory and non-supervisory employees in both productive and unproductive activities.

To investigate inequality in labor compensation further, I plot in Figure 9 five types of labor income as shares of the Marxist value added (VA). First, the value of labor power (the labor income of non-supervisory workers in productive activities), which begins a steady decline after 1980 from 44% to 33% of value added. Second, compensation of government employees at all levels (local, state and federal), doubling from 8% in 1947 to 16% in 1975 and then leveling off at around 15% of value added. Mohun (2016) estimates the *labor incomes* of three classes (workers, non-capitalist managers and capitalists) from IRS tax-unit data. Using his dataset, I compute the

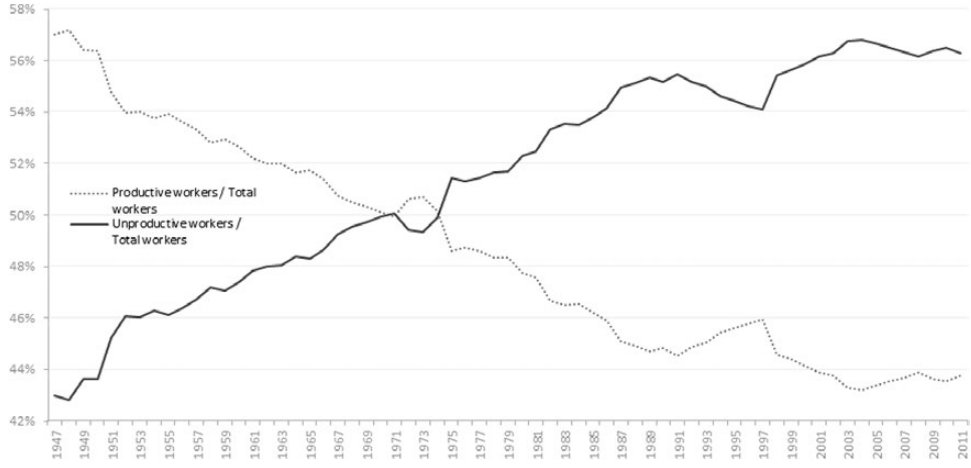

Fig. 7. *Productive and unproductive shares of total employment (1947–2011).*
Source: Author's calculations.

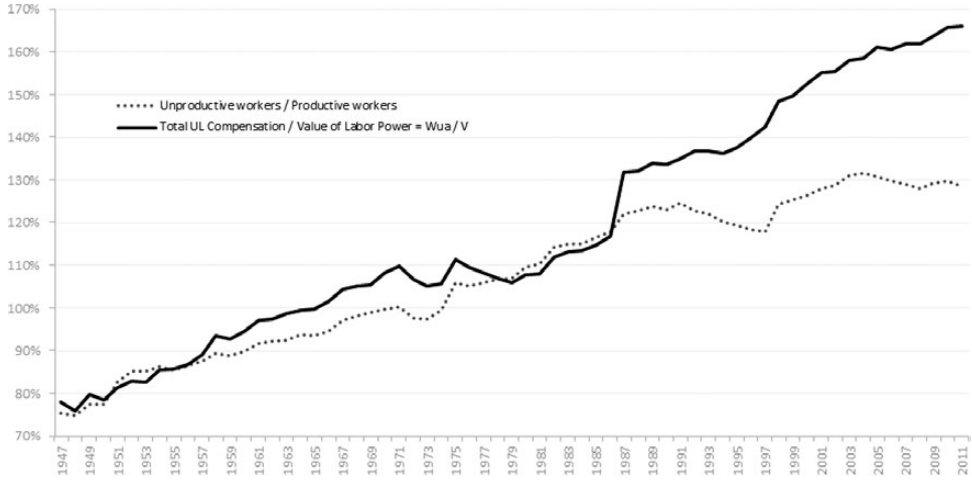

Fig. 8. *Employment and compensation of unproductive employees relative to productive workers (1947–2011).*
Source: Author's calculations.

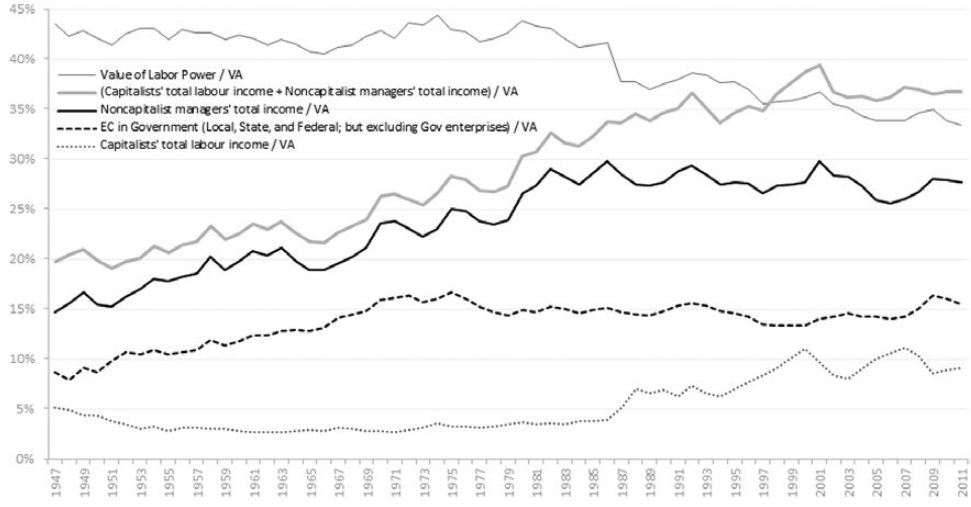

Fig. 9. *Labor income shares of Marxist value added (1947–2011).*
Source: Author's calculations; and Mohun (2016). Only labor income is included for managers and capitalists. Because of the overlap between functional and personal distributions of income, percentages do not have to add up to 100%.

ratios of the *labor* income of non-capitalist managers and the *labor* income of capitalists to the Marxist value added. The labor incomes of managers double from 15% of value added to 30% in 1986 and hover around 27% until 2011. The labor incomes of capitalists fluctuate at around 4% up to 1986 and then nearly triple to 11% in 2007. The *labor incomes* of managers and capitalists jointly represented 20% of value added in 1947 but twice that in 2001.

The estimates in Figures 8 and 9 suggest that besides a shift in employment from productive to unproductive labor, there has been an even greater shift of labor income from

non-supervisory to supervisory employees (the latter including top managers and CEOs). As Mohun (2016) indicates, the top income earners have seen an increasing proportion of their total income derived from labor income as opposed to non-labor income.

The US economy has thus had three concurrent dynamics since 1980: (a) structural change from productive towards unproductive activities; (b) shift of value added from productive workers' labor income to surplus value; and (c) shift of labor income from non-supervisory to supervisory employees in productive and unproductive activities. In the last section of this paper, I offer an alternative explanation of why these three processes cannot be simply reduced to changes in class incomes as Mohun (2014, p. 370—emphasis added) suggests when claiming that 'a class approach, focusing on the working class and class struggle, is *sufficient* to understand the historical evolution of the U.S. economy'.

The evidence so far presented indicates that while productive workers produce ever more surplus value, unproductive activities and well-paid unproductive employees consume increasingly more of the surplus. After 1980 the capitalist and top-managerial classes in the USA benefited from increasing levels of labor exploitation and income inequality at the same time that the American economy was changing its structure towards unproductive activity. The effects of rising exploitation of productive labor combined with faster unproductive accumulation on profitability are analyzed in the next section.

4.3 Profitability and unproductive accumulation

In Figure 10 I plot my estimates of the general profit rate à la Marx (from equation (3)) and the net profit rate of productive activities (from equation (4)). The general profit

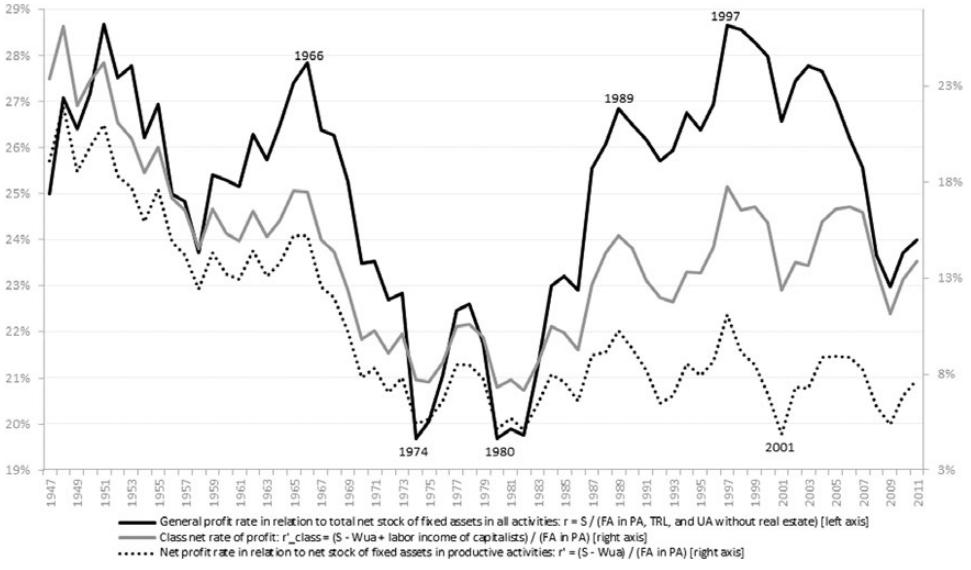

Fig. 10. *General and net profit rates (1947–2011).*
Source: Author's calculations. Labor incomes of capitalists are from Mohun (2016).
Note: S = surplus value; Wua = total compensation of unproductive labor; PA = productive activities; TRL = trade, rental, and leasing; UA = unproductive activities; FA = fixed assets.

rate is an index of how the surplus value generated in productive activities compensates the investment in fixed assets in all productive and unproductive activities combined. It displays four distinct phases during the postwar period. First, during the Golden Age between 1947 and 1966 it is roughly stable at around 26.3%. Second, during the crisis of Keynesianism from 1966 to 1980 it plummets from 27.8% to 19.7%. Third, during the Neoliberal period it recovers from its depressed level at 19.7% in 1980 to a historical high at 28.6% in 1997, indicating that Neoliberal policies did restore profitability. Fourth, from its peak at 28.6% in 1997 the profit rate falls significantly to 23% in 2009. The general profit rate was thus falling consistently during the ten years before the major crisis that began in late 2007.

The net profit rate shows how the share of the surplus that remains in productive activities remunerates the productive capital stock. It drops significantly from 22% in 1948 to 5.4% in 1974, hitting a low point at 5% in 1982, then recovering to 10.3% by the end of the 1980s and hitting a peak at 11.1% in 1997. After the 1990s the net profit rate for productive activities hits its lowest point at 4.8% in 2001 and keeps hovering around 7% until 2011, at about a third of its value compared to 1948.

Mohun (2016, 2014, 2006) argues that from a class perspective the labor incomes of capitalists should be shifted from W_{UA} to in the computation of the net rate of profit. For comparison, in Figure 10 I include a *class* net rate of profit à la Mohun (2016) by counting the labor incomes of capitalists as part of net profits. Further details on this class perspective of the profit rate are included in Section A.5 of the Appendix. In the Appendix I also present different versions of the general and net profit rates by deducting government wages from W_{UA} and government assets from K_{UA}. Netting out the government does substantially impact the levels of the profit rates, because of the significant size of state wages and assets. However, their long-run trends remain similar. Government wages and assets are therefore not the culprits for the observed trends in profitability.

To portray the changing correlation between exploitation and profitability, in Figure 11 I plot the rate of surplus value together with the general profit rate. To facilitate the comparison, I adjust the left and right axes so as to make the two series overlap. The joint plot reveals a remarkable pattern. The rate of surplus value and the general profit rate tracked each other very closely until 1980. From 1947 to 1980 the trend of the general profit rate displayed the same behavior as the rate of exploitation of productive workers in productive activities. Beginning in the early 1980s, however, the rate of surplus value starts to rise significantly while the profit rate falls behind. The gap between the two series widens considerably every year between 1980 and 2011, indicating how profitability recovers but much less than the rising rate of exploitation of productive workers. In the analysis that follows, I show that this disconnection between profitability and exploitation after 1980 can be attributed to the rapid rise in unproductive labor compensation and to the rapid rise in the unproductive capital stock.

In Figure 12 I plot the organic composition of capital $\left(OCC = \frac{K_{PA}}{V} \right)$ together with the unproductive composition of capital $\left(UCC = \frac{K_{UA}}{V} \right)$. Both series rise over time even though with distinct behaviors. The OCC rises substantially from 1947 to a peak in 1982, but falls continuously until 2000. It then sharply recovers to record-high levels after 2000. The UCC rises continuously from 1953 to 1975 but stagnates from

1975 until the mid-1990s. Only by 1997 does the UCC reach its previous 1975 peak level. From 2000 onwards the UCC rises systematically to an unprecedented extent. The joint plot in Figure 12 reveals that despite the historical rise in the OCC, the UCC has actually been rising faster and closing the gap between the two series since the 1980s.

The unproductive capital stock has begun to climb faster than the productive capital stock exactly after 1980. I plot in Figure 13 the ratio of the UCC to the OCC, which is in turn equal to the ratio of the stock of fixed capital in all nonresidential

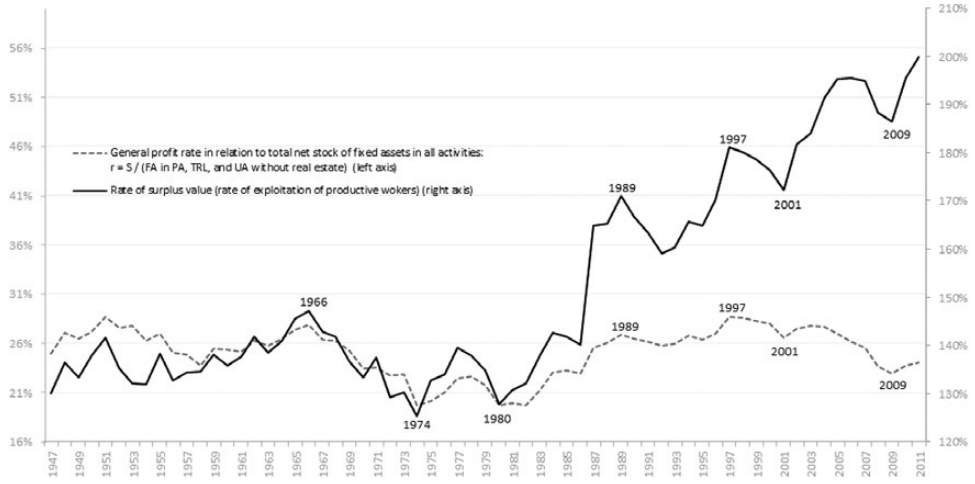

Fig. 11. *General profit rate and rate of surplus value (1947–2011).*
Source: Author's calculations.
Note: S = surplus value; PA = productive activities; TRL = trade, rental, and leasing; UA = unproductive activities; FA = fixed assets; r = general profit rate.

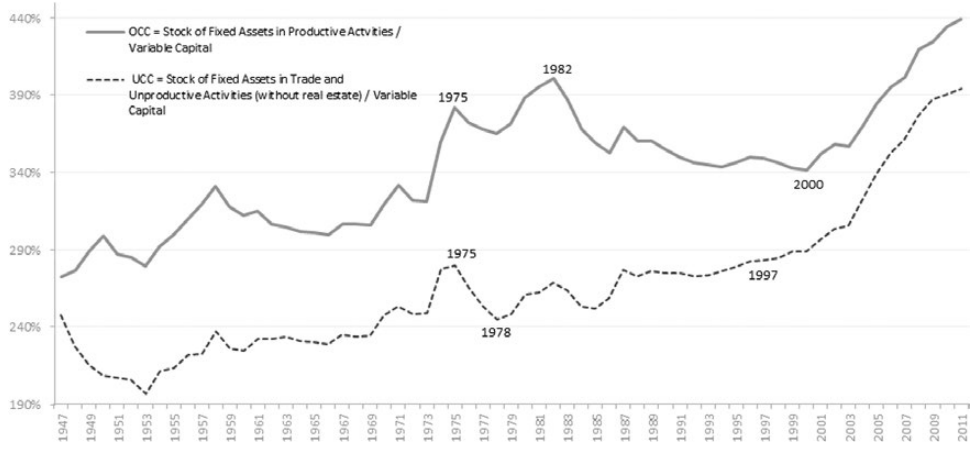

Fig. 12. *Organic and unproductive compositions of capital (1947–2011).*
Source: Author's calculations.
Note: OCC = organic composition of capital; UCC = unproductive composition of capital.

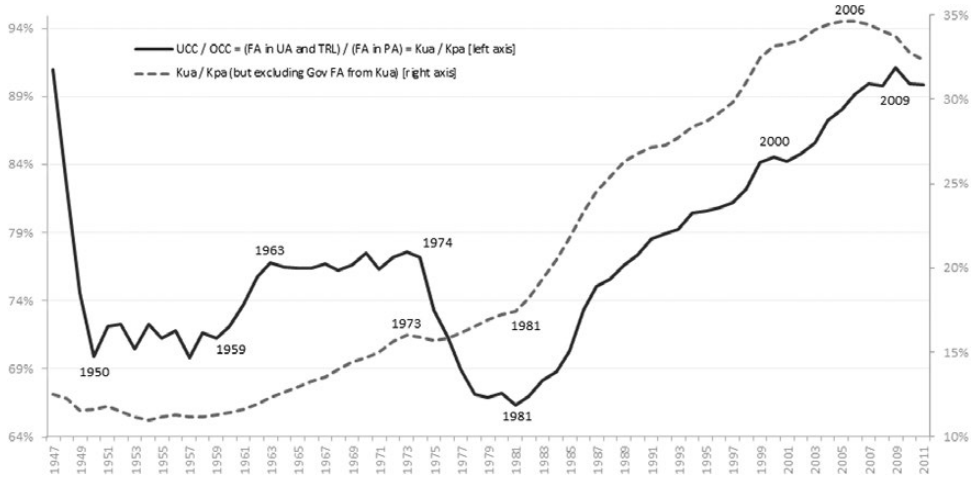

Fig. 13. *Ratio of unproductive to productive capital stock, with and without government fixed assets (1947–2011).*

Source: Author's calculations.
Notes: OCC = organic composition of capital; UCC = unproductive composition of capital; FA = fixed assets; PA = productive activities; TRL = trade, rental, leasing; UA = unproductive activities.

unproductive activities relative to productive activities: $\frac{UCC}{OCC} = \frac{K_{UA}}{K_{PA}}$. During the 1950s the $\frac{K_{UA}}{K_{PA}}$ ratio fluctuates around 70%, and then around 77% from 1963 to 1974. It then drops consistently until its lowest historical level in 1981. Beginning in 1981, the $\frac{K_{UA}}{K_{PA}}$ ratio climbs faster and higher than in any other period. From 1981 to 2009 the ratio of unproductive to productive capital stock rises 37.5%, a record increase for the postwar era.

Because of the substantial share of government fixed assets in K_{UA}, for comparison I plot the same $\frac{K_{UA}}{K_{PA}}$ ratio in Figure 13 but exclude state fixed assets at all levels (local, state and federal, keeping productive government enterprises in K_{PA}). In this case the $\frac{K_{UA}}{K_{PA}}$ ratio more than triples its value from a low point at 11% in 1954 to a peak at 35% in 2006. Even after netting out government assets, the unproductive capital stock doubles its size relative to the productive capital stock from 1980 to 2006.

In order to check for the evolution of the determinants of profitability, in Figure 14 I plot jointly the rate of exploitation of productive workers, the OCC, the UCC and the $\frac{W_{UA}}{V}$ ratio as index numbers (1980 = 100). The UCC and the $\frac{W_{UA}}{V}$ ratio appear both in two versions: with and without government wages and assets. The same series from Figure 14 also appear in Table 2 but in terms of cumulative growth rates for three distinct time periods.

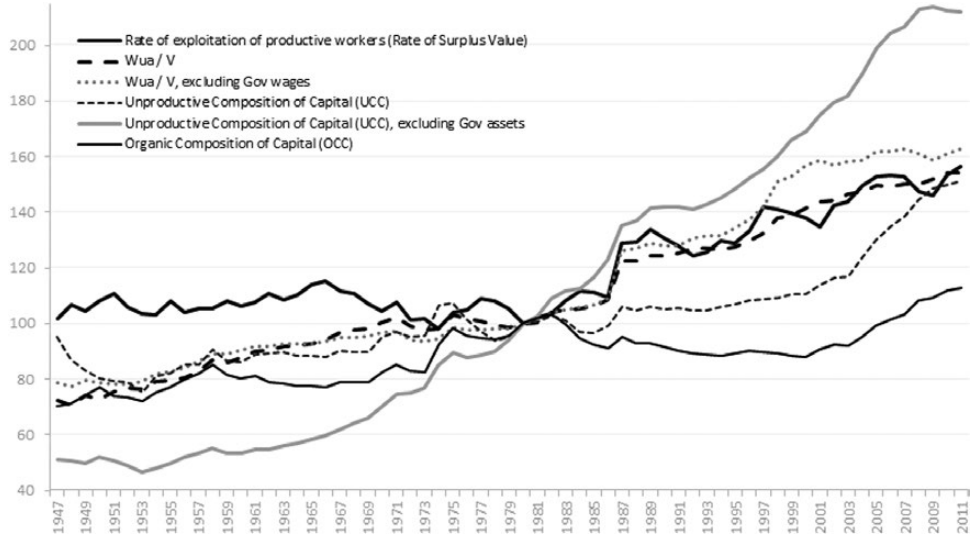

Fig. 14. *Determinants of profitability (1947–2011).*
Source: Author's calculations. All measures are cast in index numbers, 1980 = 100.

Table 2. *Determinants of profitability–cumulative growth rates (1947–2011)*

	Whole period (1947–2011)	**Regulated period (1947–80)**	**Neoliberal period (1980–2011)**
Rate of exploitation	53.6%	–1.7%	56.2%
OCC	61.0%	42.5%	12.9%
UCC	58.9%	5.3%	51.0%
UCC (without gov assets)	316.0%	96.4%	111.8%
Wua / V	113.1%	38.3%	54.1%
Wua / V (without gov wages)	106.7%	27.1%	62.5%

Sources: Author's calculations. Growth rates are cumulative for the time periods indicated.

From 1947 to 1980 the compression in the general profit rate came from a non-increasing rate of exploitation combined with increasing levels of the UCC, OCC and unproductive wages. Despite the steep rise in the rate of exploitation beginning in 1980, the UCC then increases substantially above the OCC, jointly with a rapid increase in unproductive labor compensation. When government wages and assets are netted out, the relative rises in the UCC and in the $\frac{W_{UA}}{V}$ ratio are even greater. From 1980 onwards the OCC is the series featuring the least relative increase.

It is also possible to decompose the current-cost net stock of fixed assets of unproductive activities (inclusive of trade, rental and leasing but excluding real estate) into five unproductive sub-categories: (i) trade, rental and leasing; (ii) knowledge and information; (iii) finance and insurance; (iv) unproductive services; and (v) general government, excluding public enterprises. In Figure 15 I present the evolution of the shares of these five sub-categories from 1947 to 2011 in percentage terms. The major share

still belongs to the general government even though it has shrunk from 86.2% in 1947 to 64% in 2011. The unproductive activities with the fastest growth rates in shares have been, in descending order: knowledge and information (from 0.8% to 5.0%); finance and insurance (from 1.7% to 10.3%); trade, rental and leasing (from 8.3% to 15.3%); and finally unproductive services (from 2.9% to 5.4%). Finance- and knowledge-related activities have grown their combined capital stocks 6-fold (or 502%) from 1947 to 2011 as a share of the total unproductive capital stock.

Finally, in Table 3 I summarize the real growth rates of key measures of productive and unproductive forms of accumulation. The estimates are broken down into annual averages for the whole 1948–2011 postwar period, the Regulated period from 1948 to 1979, and the Neoliberal period from 1980 to 2011. The real growth rates of

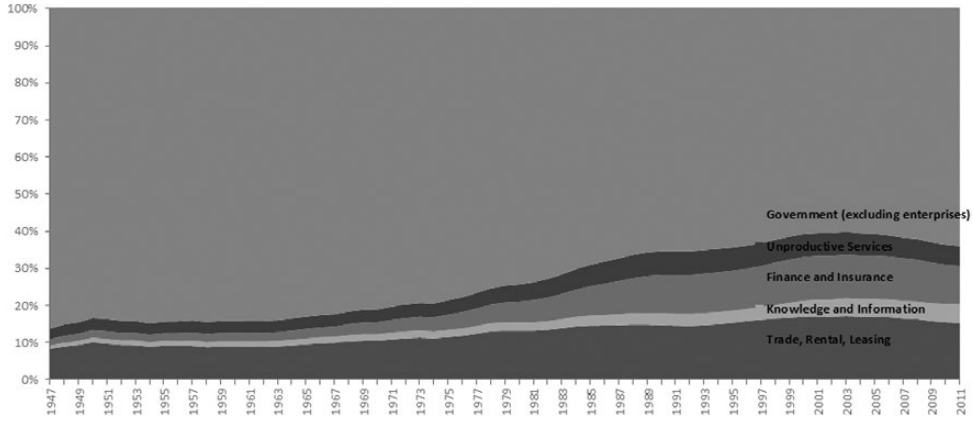

Fig. 15. *Decomposition of the unproductive capital stock (1947–2011).*
Source: Author's calculations.

Table 3. *Average annual real growth rates (1948–2011)*

	Whole period (1948–2011)	Regulated period (1948–79)	Neoliberal period (1980–2011)
Productive activity (PA)			
Total value of PA	2.66%	3.46%	1.86%
Marxist value Added of PA	2.89%	3.42%	2.37%
Surplus value of PA	3.19%	3.50%	2.89%
Capital stock of PA	3.30%	4.44%	2.16%
Unproductive activity (UA)			
Gross income of UA	4.73%	4.61%	4.84%
Net income of UA	4.90%	5.62%	4.19%
Capital stock of UA (nonresidential, with Gov)	3.29%	3.47%	3.12%
Capital stock of UA (nonresidential, without Gov)	4.87%	5.45%	4.29%

Source: Author's calculations. Real growth rates are all in 2005 dollars.
Notes: Real growth rates were obtained by deflating nominal flow measures by the implicit GDP deflator, and nominal stock measures by the producer price index (PPI). Marxist VA, surplus value, gross and net incomes of unproductive activities are all net of depreciation of fixed assets.

unproductive forms of accumulation tended to be higher than their productive counterparts for the whole postwar period, and the measures of productive accumulation faced substantial declines in the Neoliberal era compared to the earlier Regulated phase.

5. Implications and final remarks

In this paper I developed an innovative Marxist analysis of capital accumulation and presented a broad range of empirical evidence that indicates a close association between faster unproductive accumulation, greater exploitation of productive workers, rising overall inequality and slower productive accumulation in the USA from 1947 to 2011. I argued that unproductive accumulation is an explanation for the decoupling between exploitation and profitability since 1980.

The rapid increase in unproductive activity in terms of incomes, fixed assets, and employment constitutes a structural change within the US economy, more pronouncedly so in the Neoliberal period. Whether or not over the long run faster unproductive accumulation has detrimental effects on productive accumulation remains an open empirical question. It is possible that the net effect is actually positive rather than negative. And it is yet not clear in which direction causality works between productive and unproductive forms of accumulation. It could be the case that unproductive activity is slowing down productive accumulation or, on the contrary, that it is productive stagnation creating faster unproductive accumulation. In this empirical matter, more conclusive evidence is required (Rotta, 2015; Olsen, 2015).

Because new surplus value must be produced to sustain higher levels of unproductive activity, one might conclude from the evidence presented in this paper that the USA will reach an inner limit to the systematic rise of unproductive accumulation. Marx himself used this form of reasoning when he claimed that an *economic crisis* would be required to realign unproductive and productive forms of capital accumulation:

> Despite the *autonomy* it has acquired, the movement of commercial capital is never anything more than the movement of industrial capital within the circulation sphere. But by virtue of this autonomy, its movement is within certain limits independent of the reproduction process and its barriers, and hence it also drives this process beyond its own barriers. This *inner dependence* in combination with *external autonomy* drives commercial capital to a point where the *inner connection is forcibly re-established* by way of a *crisis*. (Marx, 1994, p. 419 – emphasis added)

An advanced open economy has the possibility of financing productive accumulation at home by 'importing surplus value' generated from abroad, even if burdened with domestic unproductive accumulation. In the recent episode of US deindustrialization, American companies have relocated to other countries and have been exporting back their own products from overseas. Even though production is offshored, the surplus value can be repatriated (Tregenna, 2014). As long as it keeps access to surplus value from commodities produced elsewhere on the planet, the USA can manage to sustain productive accumulation despite its higher levels of domestic unproductive activity.

The empirical evidence in this paper suggests that among its unproductive endeavors, the USA is likely to experience a continued increase in the share of knowledge-rents and finance. The growing importance of intellectual property rights in a knowledge economy is likely to boost the economic significance of knowledge-rents. The continued commodification of knowledge and information will then strengthen the rentier aspect of capitalism. The literature on financialization (Krippner, 2005; Epstein, 2005;

Lapavitsas, 2013; Davis, 2016; Orhangazi, 2008; Lin and Tomaskovic-Devey, 2013; Tomaskovic-Devey and Lin, 2011) additionally suggests that the influence of finance on production is most likely to remain on the rise.

On the causes of unproductive accumulation, I would stress two explanations. The first explanation for these trends is cast at a more concrete level of analysis (as in Harvey, 2005; Kotz, 2015; Duménil and Lévy, 2011; Stiglitz, 2012; Lazonick, 2013; Mohun, 2016, 2014). These authors identify historical processes such as changes in the tax code, the election of Reagan in 1980, the attack on unions and on the welfare system, the successive repeals of financial regulations from the Bretton Woods system, the rise of shareholder value and corporate governance, deindustrialization and offshoring of manufacturing jobs and the transition to a service economy. The literature is vast on these issues, and all of these elements have played a concrete role in the structural change of the US economy since 1980.

An alternative explanation, however, could offer a complementary argument for the causes of unproductive accumulation. As Rotta and Teixeira (2016) and Paulani (2014) have indicated, Marx had a deeper understanding of the long-run dynamics of capitalism, an understanding that was already built into his own theory of value. For Marx, capitalism is a system that produces abstract forms of wealth: the more that capitalism develops concretely, the more abstract forms of wealth it creates. In this regard Marx structured the three volumes of *Capital* in a very particular way. Even though *Capital* moves analytically from a higher level of abstraction to a higher level of concreteness, the forms of wealth that its analysis covers perform the opposite movement. The *forms of wealth* move from more concrete towards more abstract forms that are increasingly *autonomized* from the production of value and the exploitation of productive labor. As Rotta and Teixeira (2016) and Paulani (2014) have argued, Marx himself had named this movement from concrete to abstract forms of wealth as the 'autonomization of value'. If Marx's long-run theory of capital is correct, then what capitalism produced in the postwar 'Golden Age' was indeed a historical exception. In case the autonomization of value unfolds as Marx theorized, capital should create even more unproductive accumulation (potentially on a global scale) and consequentially even more autonomized forms of wealth.

Supplementary Data

Supplementary material is available at *Cambridge Journal of Economics* online.

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