
Unproductive Labor in the U.S. Economy 1964-2010¹

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Abstract

It is commonly proposed by those who accept the distinction between productive and unproductive labor that a rising proportion of unproductive labor constitutes a burden to the operation of a capitalist economy, because unproductive labor is paid out of surplus-value, leaving less available for accumulation. This paper evaluates recent attempts to estimate empirical trends in productive and unproductive labor in the U.S. economy since 1964. These attempts are flawed by a failure to distinguish between working class unproductive labor and the unproductive labor attributable to managers-plus-capitalists. This distinction is at the heart of the trends in the neoliberal era, and these trends suggest that the distinction between productive and unproductive labor is less empirically useful than a focus on class.

JEL classifications: E11, J21, N12

Keywords

productive labor, unproductive labor, U.S. economy since 1964

1. Introduction

The categories of productive and unproductive labor are among the most controversial in surplus-based theories of value. For those advocating their use, productive labor produces value and surplus-value whereas unproductive labor does not. For those advocating the abandonment of the distinction, then all wage-labor in capitalist production processes produces value and surplus-value, that is, all labor is productive. There is a large literature discussing and evaluating the theoretical merits of the categories in these terms, but there is no settled consensus with generally agreed conclusions.²

For those advocating the distinction, unproductive labor is paid out of surplus-value (because it consumes rather than produces value), which in turn implies that the more unproductive labor there is, the less is the surplus-value available for investment and accumulation. However, simple

¹I am grateful to Susan Himmelweit for comments on an earlier draft. The usual disclaimer applies.

²See Foley (1986: ch. 7) and Mohun (2003) together with the references in the latter.

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arithmetic is not sufficient, first, because a rising proportion of unproductive labor might be financed by a rise in the rate of surplus-value, and second, a stronger proposition, because a rising proportion of unproductive labor might cause a rise in the rate of surplus-value. So those advocating the distinction have to show that the categories have empirical purchase, by using them to provide an empirically coherent explanation of capitalist development.

Although the empirical literature is not extensive, the claim that an increasing proportion of unproductive labor is an impediment to accumulation and profitability has a long pedigree. For example, with very limited data, Gillman (1957) wrote,

Taking the economy as a whole, these growing “unproductive” expenditures eat into the surplus-value produced and tend to effect a decline in the rate of the net surplus-value realized.

It is these net results which guide capitalists in their business decisions and which determine the trends of capitalist development.... (Gillman 1957: 85)

Using different data and (a mostly later) period, Moseley (1991) wrote,

... this relative increase of unproductive labour required that a greater proportion of the surplus-value produced by productive labour had to be used to pay the costs of unproductive labour, thus leaving a smaller portion of surplus-value as the profit of capitalists. (Moseley 1991: 153)

The same idea motivated Shaikh and Tonak (1994). More recently, and following Shaikh and Tonak closely in methodology, it was repeated in Paitaridis and Tsoulfidis (2012):

unproductive activities are a burden to capital accumulation, because they reduce the amount of social product that can be invested productively. Thus, the higher the share of unproductive activities in the economy’s social product the less is left to be invested productively and thus the lower the capital accumulation We expect that past a certain point the expansion of unproductive activities is not sustainable for it interferes with the normal process of capital accumulation (Paitaridis and Tsoulfidis 2012: 215-16, 217)

This paper examines this claim, and from a sympathetic stance. Indeed, it follows the methodology of Shaikh and Tonak (1994), as amended by Mohun (2005), regarding the procedures for calculating quantities of productive and unproductive labor and the wages they are paid.³ It must be emphasized then that this is not a paper that is concerned with arguments for and against the categories of productive and unproductive labor. It takes as given the theoretical arguments for the importance and usefulness of the categories, and focuses on the empirical effects of their historical evolution. Neither is this a paper which advocates some different method of empirical calculation, or some different interpretation of what is productive and what is unproductive. So the paper largely agrees with the recent empirical estimates of the magnitudes of unproductive labor (quantities and wages) presented by Paitaridis and Tsoulfidis (2012).⁴ But it argues that the received interpretation of these empirical estimates and the significance attributed to them are fundamentally misconceived.

The paper is organized as follows. The next section takes a position on some methodological issues which provide a background for the remainder of the paper. The third section presents the data in a preliminary manner, and sketches the causes adduced for an increasing relative share of

³“Wages” is an ambiguous term, variously connoting employee compensation, earnings, and accruals, depending on the context. In this paper, it means total compensation of employees (the sum of wage and salary accruals and employer-financed benefits). Where the meaning is restricted to accruals only, this is explicitly stated.

⁴I am grateful to Paitaridis and Tsoulfidis for sending me a spreadsheet of their data.

unproductive labor. The following section considers the empirical data in more detail and argues that the only way to make sense of it is to focus on the category of class. Empirically, the categories of productive and unproductive labor have little purchase on a description of the evolution of the U.S. economy, and the paper uses the categories of productive and unproductive labor to consider why this should be so. In this particular sense, the paper can be considered an immanent critique.⁵ The final section concludes, and detailed data issues are relegated to an appendix.

2. Methodology

This paper takes the following perspective (Foley 1982; Mohun 1994). The fundamental premise of the labor theory of value is that aggregate value added is conserved across the circulation phases of the circuit of capital. This has two consequences, first for the specification of productive and unproductive labor, and second for the accounting that a labor theory of value must satisfy. Consider each of these in turn.

2.1 *The specification of productive and unproductive labor*

Conservation of aggregate value added through the circulation phase of the circuit of capital entails that there is no alteration of aggregate value added in the flows that transform a stock of money capital (M) into a stock of productive capital (C : inputs of labor-power and non-labor means of production), and in the flows that transform a stock of commodity capital (C' : outputs) into a stock of money capital (M'). Hence any laboring activity involved in these “metamorphoses” of capital ($M - C$ and $C' - M'$) adds no new value, and is unproductive. Only the wage-labor involved in the transformation of productive capital into commodity capital is productive.

Focusing on the circuit of capital in this manner immediately identifies the major categories of unproductive labor. First, the transformation of money capital into productive capital involves all those activities concerned with the purchase of inputs ready for production. For labor-power, this identifies a variety of business services (such as those performed by employment agencies). For non-labor means of production (especially large indivisible quantities of fixed capital), it identifies all those activities (summarized as financial capital) that create a complex system of finance and credit, assembling out of small deposits of money large sums of money capital that can be committed to production. In addition, legal services are required to effect, and private security services to police, transfers of title of ownership. Second, the transformation of commodity capital into money capital identifies all activities concerned with the processes of sale (summarized as commercial capital), as well as the legal and private security services just mentioned. There are also activities straddling both purchase and sale, concerned with the recording of flows of capital (business services such as accounting and bookkeeping), and advising on how reconfigurations of these flows might be possible (business services such as payroll, tax preparation, and management consultancy, as well as the mergers and acquisitions advisory activities of investment banks).

Further, in all processes involving capital and wage labor, capitalists hire managers to organize activities and to supervise in order that those activities are satisfactorily performed. These processes are typically hierarchical and authoritarian, with significant pay differentials that increase up the hierarchy. Separating “pure” organization from authoritarian hierarchy and supervision is both theoretically doubtful and empirically impossible. The labor involved in such activities is conventionally treated as unproductive,⁶ and the same practice is followed here. It makes little conceptual sense to say that the policing of the capital relation in production and circulation processes by the agents of capital directly creates value.⁷

⁵While the same theme is present in Mohun (2006) using data from 1964 to 2001, this paper is more focused on that theme, and also brings the data forward to 2010.

⁶See for example Moseley (1991: 35-6).

⁷Of course there may be indirect effects, but that is not here the issue.

Finally, there are a number of private sector activities involving wage-labor which are of doubtful relevance to capitalist production. Empirically, these include museums, botanical and zoological gardens, and membership organizations such as churches, trade unions, trade associations, and charities, and their wage-labor is treated here as unproductive.

2.2 Accounting for value

Conservation of aggregate value added entails that the total hours of productive labor and the money value of aggregate value added measure the same thing, so that one can determine how many hours are represented by a unit of money (the value of money) and, inversely, how much money value added is created by an hour of productive labor (the monetary equivalent of labor-time).

Distinguishing productive and unproductive components by the subscripts p and u respectively, denote the number of workers by L , the hours they work by H , and the wages they are paid by W . If aggregate value added in price terms is denoted by Y , profits by Π , surplus value in money terms by MSV , and the value of money by λ_m , then the following accounting relations hold.

$$Y = W + \Pi = W_p + W_u + \Pi \quad (1)$$

$$Y = W_p + MSV \quad (2)$$

$$Y = \frac{H_p}{\lambda_m} \quad (3)$$

In the first chapter of *Capital I* Marx specified his labor theory of value in terms of a typical or average commodity, whereby its unit price was measured by its unit value divided by the value of a unit of the money-commodity. It is however preferable to think of this account as one of aggregates (and without restricting money to a commodity-form), and this is what equation (3) does. For the conservation principle applies only at the level of aggregate value added. It does not apply to any individual transaction (except by chance) for two reasons. First, even were all labor productive, the value produced and embodied in commodities by an individual capital would be different from the value it received from selling those commodities, because of the different compositions of capital in individual production processes combined with the (tendential) competitive equalization of the rate of profit. Second, because some labor is unproductive, the value it consumes in wages is produced elsewhere. So nonequivalent (or unequal) exchange is the norm.

The only individual transaction to which these two strictures do *not* apply is the purchase and sale of labor-power. This is because labor-power is a capacity, an aspect of human beings, and the latter are not produced in capitalist production processes. In the “production” of labor-power, issues concerned with differing compositions of capital, the equalization of the rate of profit in competition, and value-creating versus value-consuming labor are irrelevant. Hence denoting the price of labor-power (the hourly wage rate) by w_p , and the value of labor-power per hour of labor hired by λ_{lp} , the conventional price-value relationship applies:

$$w_p = \frac{\lambda_{lp}}{\lambda_m} \quad (4)$$

from which it immediately follows that

$$\lambda_{lp} = w_p \lambda_m \quad (5)$$

(If it were assumed that all exchanges were equivalent, and that all the wage was spent, then the value of labor-power would also equal the value of the goods on which the wage is spent. But these are special assumptions which in general do not hold.) Combining equations (3) and (5), the value of labor-power (per hour of labor hired) is the productive labor wage share of money value added:

$$\lambda_{lp} = \frac{w_p H_p}{Y} = \frac{W_p}{Y} \quad (6)$$

and this will be of some moment in the argument of this paper.

A different approach to that just specified has been proposed by Shaikh and Tonak (1994), which distinguishes between aggregate value added in price terms and Marxian aggregate value added in money terms. For Shaikh and Tonak, the latter is larger because of their treatment of the depreciation and intermediate inputs of trade activities, and the royalties paid by productive sectors to finance and a variety of other business and legal services. In comparisons over time, this difference is of little practical significance. From 1964 to 2007, the ratio of Marxian aggregate value added in money terms (as computed by Paitaridis and Tsoulfidis (2012) following Shaikh and Tonak) to aggregate value added in price terms (as specified in equations (1)-(2)) averages 108.41 percent with a standard deviation of 0.83 percent. This approximate constancy over time results in a difference in level of various variables (such as the rate of surplus-value), but no significant difference in how such variables change over time. Consequently, differences between the approach of this paper and the Shaikh-Tonak methodology of estimating aggregate value added do not empirically matter in the argument that follows.

2.3 Caveats

Two significant caveats must be mentioned concerning the analytical framework, one concerning general government, and the other concerning the national versus the world economy.

First, general government activities employ wage-labor but do not produce a marketed output. Instead, they are financed by taxation (and debt). In a pre-tax-and-benefit analysis, general government is excluded from equations (1)-(4). To include general government would involve double-counting, because general government wages are already included in the pre-tax wages and profits of the private sector. Of course in a post-tax-and-benefit analysis, general government would have to be counted explicitly. But this would be difficult, since (corporations apart) taxes are paid by individuals, and benefits are received by households. Because taxes, benefits, and debt are not considered here, general government too cannot be considered, and the categories of productive and unproductive labor refer only to the private sector (plus government enterprises).

Second, the conservation of value added in circulation applies only at the level of aggregate value added, and this poses a significant problem for empirical analysis, since capitalism is a world system but statistics are collected by national agencies and represent subsets of the world economy. Were a national economy the same as the world economy, there would obviously be no difficulty. But equally obviously, this is not the case. In 1969, world GDP was (in 2005 prices) some \$14.9 trillion, increasing to \$50.8 trillion in 2010. The share of the U.S. economy in this has fallen, but only slightly, from 28.6 percent in 1969 to 25.8 percent in 2010.⁸ So the weight of the U.S. economy is just over a quarter for the whole of the period. Were the U.S. economy

⁸The data are from the International Macroeconomic Data Set produced by the Economic Research Service of the U.S. Department of Agriculture (see the appendix). Over the same period, the share of East Asia (Japan, Hong Kong, China, Taiwan, South Korea) grew from 11.5 percent to 20.0 percent. That the U.S. share has barely fallen in the face of this rise illustrates vividly the long-run technological progressivity of U.S. capitalism.

completely autarkic, then, whatever its share in world GDP, again there would be no difficulty. But the more open the economy, the more problematic is the assumption of the conservation of aggregate value added in circulation. While the United States remained the world's largest economy over the whole period, in 1964 its ratio of the sum of exports and imports to aggregate value added was 12.9 percent, growing to 42.5 percent by 2010, so that the U.S. economy cannot possibly be treated as closed. On the other hand, over the whole period 1964–2010, net exports to aggregate value added averaged -2.41 percent (albeit with a high standard deviation (relative to the mean) of 2.72 percent). One might think that aggregating unequal exchanges entails some cancelling out, and that the inequalities in unequal exchanges are likely to be on average small relative to the magnitudes of the values exchanged, and these two considerations might imbue some robustness to the assumption that the U.S. economy can be treated as if the conservation of aggregate value in circulation applied. But the ways in which unequal exchanges ripple through the input-output structure of economies are complex, and it is just not possible to know with any precision the magnitude of the overall effect of openness on the conservation of aggregate value added in circulation. The hope is that the order of magnitude of error is small.

3. The Empirical Story: Take I

As in Mohun (2005), and Paitaridis and Tsoulfidis (2012), data limitations entail that the period covered for the U.S. economy begins in 1964. Methods of calculation are presented in Shaikh and Tonak (1994) and amended in Mohun (2005). Briefly, the working class is identified through the criterion of control: those whose work involves controlling the work of others are not members of the working class, and those whose work is controlled by others constitute the working class.⁹ The latter average 81.3 percent of the employed population over the years 1964 to 2010, with a standard deviation of 0.88. Supervisors (managers-plus-capitalists) make up the difference (18.7 percent), and these class proportions have remained remarkably stable over the 47 year period. The working class is divided into productive and unproductive components according to their location in the circuit of capital, as discussed above.¹⁰ Managers-plus-capitalists are then added to the unproductive working class to arrive at total unproductive labor.

Figure 1 shows the results, displaying unproductive workers as a proportion of total employment, and unproductive wages as a proportion of total wages. The dotted lines display the data from Paitaridis and Tsoulfidis (2012). The small differences in levels result from minor differences in classification and computation, and from revisions to national accounts data, but the differences in trend are negligible. Unproductive labor amounted to about 42 percent of employment in 1964, and increased to a peak of around 49 percent in 2003, falling back to 47.5 percent in 2010. So the proportion of unproductive labor was generally increasing over time (most markedly in the 1980s). The wages unproductive labor was paid increased rather faster, from 50.7 percent of all wages in 1964 to a peak of 65.5 percent in 2007, falling back to 64.8 percent by 2010. Again, most of the increase occurred in the 1980s. So a first look at the data establishes a rising proportion of unproductive labor over time, both in terms of share of employment and (more emphatically) in terms of share of total wages, from about half of total wages to about two-thirds.

3.1 Causes and consequences of the growth in unproductive activities

Paitaridis and Tsoulfidis (2012: 217) suggest three reasons for the growth in unproductive activities. First, intensification of competition forced corporations to allocate more resources to sales

⁹Other researchers, in addition to Shaikh and Tonak (1994) and Paitaridis and Tsoulfidis (2012) who have used this data include Gordon (1996), Nilsson (1999), and the Economic Policy Institute's biannual *The State of Working America* (latest edition Michel et al. 2012). See also Mohun (2006, 2012).

¹⁰The allocation of industries (by both Standard Industrial Classification and North American Industrial Classification System) is outlined in tables 1 and 2 in the appendix.

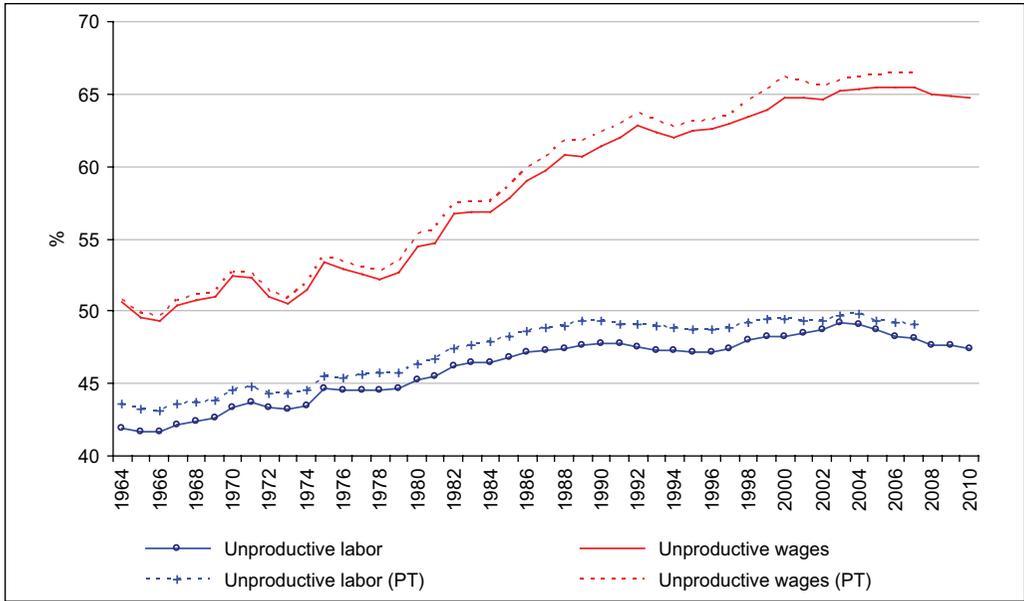


Figure 1. Shares of Total Employment and Wages, United States, 1964-2010.

promotion, administration, and supervision. Second, social cohesion required the expansion of welfare benefits. Third, international competition for resources and markets created pressures for increased military expenditures. Since the last two of these three reasons relate to the activities of general government, they cannot be considered in the framework presented here (and indeed Paitaridis and Tsoulfidis explicitly exclude general government from consideration in their data construction). Hence in Figure 1 only the first consideration is relevant. The rising trend in unproductive activities is thus ascribed to the intensification of competition, while the difference in trends between relative numbers and relative wages is attributed to the effects of “the information technologies of the 1980s [which] slowed down the growth rate of unproductive employment but not its wage share” (Paitaridis and Tsoulfidis 2012: 218).

While the general thematic approach of Paitaridis and Tsoulfidis (2012) is similar to that of Moseley (1991: ch. 5), it is difficult to make precise quantitative comparisons between Moseley’s analysis and that displayed in Figure 1, because the methods of calculation are different (compare Moseley 1991: Appendix B with Mohun 2005). But, unlike Paitaridis and Tsoulfidis, Moseley explicitly distinguished between commercial and financial labor on the one hand, and supervisory labor on the other. For the relative growth in supervisory labor (about one-sixth of the total growth of unproductive labor in his dataset), he suggested that the growth in the size of firms required the development of both complex systems of bureaucratic control and structures of administration that could better contain and manage class conflict. For the growth in financial labor (about one-sixth of the total growth), he suggested that the spread of personal checking and hence the faster output growth of banks was a significant factor. Last, Moseley ascribed the relative growth of commercial labor (about two-thirds of the total growth) to slower productivity growth because of the difficulties of mechanizing transactions dominated by person-to-person contacts. Hence increasing proportional quantities of commercial labor were needed to circulate the growing output of productive labor.

Revisiting his analysis nearly a decade later, Moseley (1999) pointed to the growing application of computer technology to the unproductive activities of circulation. He considered that

while prior to 1994 such technological advances were not strong enough to outweigh the relative increase in circulation labor, it was a more open issue whether their accelerating pace after 1994 would be able to do so. This is an important consideration, because it recognizes that the issue of the burden of unproductive labor is not a simple arithmetical issue concerned with the quantity of surplus-value consumed by unproductive labor and thereby unavailable for investment. The rate of surplus-value matters. This can be shown as follows.

For Moseley and Paitaridis and Tsoulfidis, the deleterious impact of a rising proportion of unproductive labor occurs through its effects on the rate of profit for the economy as a whole (r), defined as the ratio of aggregate profits (IT) to the fixed capital stock (K). Since profits are what is left of surplus-value in money terms (MSV) after the wages of unproductive labor (W_u) have been paid, then

$$r = \frac{MSV - W_u}{K} \quad (7)$$

and, *ceteris paribus*, the rate of profit is inversely related to the wages of unproductive labor.¹¹ Dividing the right hand side of equation (7) through by the wages of productive labor (W_p),

$$r = \frac{\frac{MSV}{W_p} - \frac{W_u}{W_p}}{\frac{K}{W_p}} = \frac{e - \frac{W_u}{W_p}}{VCC} \quad (8)$$

where MSV / W_p is the rate of surplus-value (e) and K / W_p is a proxy for the value composition of capital (VCC).¹² Since the rate of surplus-value can be rewritten as

$$e = \frac{MSV}{W_p} = \frac{Y - W_p}{W_p} = \frac{p_y y - w_p H_p}{w_p H_p} \quad (9)$$

where p_y is the money value added deflator and y is real (constant price) money value added, then

$$e = \frac{\frac{y}{H_p} - \frac{w_p}{p_y}}{\frac{w_p}{p_y}} \quad (10)$$

so that the rate of surplus-value increases with the difference between labor productivity and the real wage (of productive labor). If this difference is large enough, the rise in e can compensate for any rise in W_u / W_p , but only if it is large enough.¹³

This however prompts a further consideration. Increases in the rate of surplus-value are not necessarily independent of increases in unproductive labor. There is no reason not to presume that some types of increase in unproductive labor might have a positive impact on the rate of surplus-value. Increases in circulation labor (whether commercial or financial) that reduce turnover time are an obvious example. So too are increases in supervisory labor that effectively increase the intensity of productive labor. Indeed, Duménil and Lévy (without using the terminology of

¹¹Moseley (1991, 1997, 1999) also distinguishes productive from unproductive capital in the denominator of equation (7), so that while unproductive wages reduce the numerator the addition of unproductive capital increases the denominator. But he found that most of the effect on the rate of profit arose from the reduction of the numerator, and hence complications in the denominator will not be pursued further here.

¹²Arguably, the composition of capital requires a specification of the productive components of fixed capital, but this is not necessary here. See also the previous footnote.

¹³It is these comparative rates of growth that underlie the "phase-changes" explored by Paitaridis and Tsoulfidis (2012).

productive and unproductive labor) argue precisely this. For them, the managerial revolution of the early years of the 20th century comprised

on the one hand, the emergence of vast general staffs of executives and employees, forming a pyramid-shaped hierarchy, and on the other hand, the transformations that took place on the shop floor involving Taylorism and the assembly line. In fact the sudden emergence of executives and employees made possible a genuine revolution in all aspects of management ... on the shop floor, through the control of inventories and the conduct of commercial transactions, as well as in financial management (of liquidity and financing). ... [This] led to extraordinary gains of efficiency. ... In these improvements of management and organization should be seen the countertrend par excellence of the decline in the rate of profit. (Duménil and Lévy 2004: 146, 148)

With these various considerations in mind, it is time to investigate more closely the data themselves.

4. The Empirical Story: Take 2

Figure 1 showed total unproductive workers as a proportion of total employment, and total unproductive wages as a proportion of total wages. However, these ratios are not very helpful, because they do not distinguish unproductive workers who are members of the working class, and unproductive workers who are supervisors (managers-plus-capitalists). It turns out that this distinction is important (which, in a class approach, is perhaps not very surprising).

4.1 Unproductive labor: The working class

The working class is defined by activities that are under the supervision of someone else; working class members, by definition, have no supervisory responsibilities above shop-floor level. The unproductive working class shares of total employment and total wages are depicted in Figure 2. In 1964, the unproductive working class comprised 25.1 percent of total employment, rising to a peak of 30.0 percent in 2007. So over 47 years, the unproductive working class employment share increased by about a fifth. Since the total working class share of total employment was approximately constant over the whole period, the shape of the time trend of the unproductive working class employment share in Figure 2 is very similar to the total unproductive employment share in Figure 1. But the same cannot be said of wage shares. The working class unproductive share of total wages was 18.6 percent in 1964, and falling to 16.7 percent in 1992 before rising to 18.1 percent in 2010. This is both quite unlike the total unproductive share of total wages in Figure 1, in which the wage share considerably exceeds the employment share in level, and increases at a much faster rate, and quite unlike the behavior of the unproductive working class share of employment in Figure 2, being both considerably lower in level and with a completely different time trend.

4.2 Unproductive labor: Supervisors

In capitalism, relations in the workplace are hierarchical and authoritarian. Only a few supervisors could properly be called capitalist; the vast majority are not capitalists but managers. But the function of capitalist management is the authoritarian control of the working class. In a complex division of labor, administration and coordination tasks are essential, but they are embedded in authoritarian hierarchy, and those who supervise act as the agents of capital.

Figure 3 shows the same information as Figure 2, but for supervisors rather than the unproductive working class. The vertical scales in figures 2 and 3 are identical, for ease of comparison. As a share of total employment, supervisors accounted for 16.8 percent in 1964, rising to a peak of



Figure 2. Unproductive Working Class Shares of Total Employment and Total Wages, United States, 1964-2010.

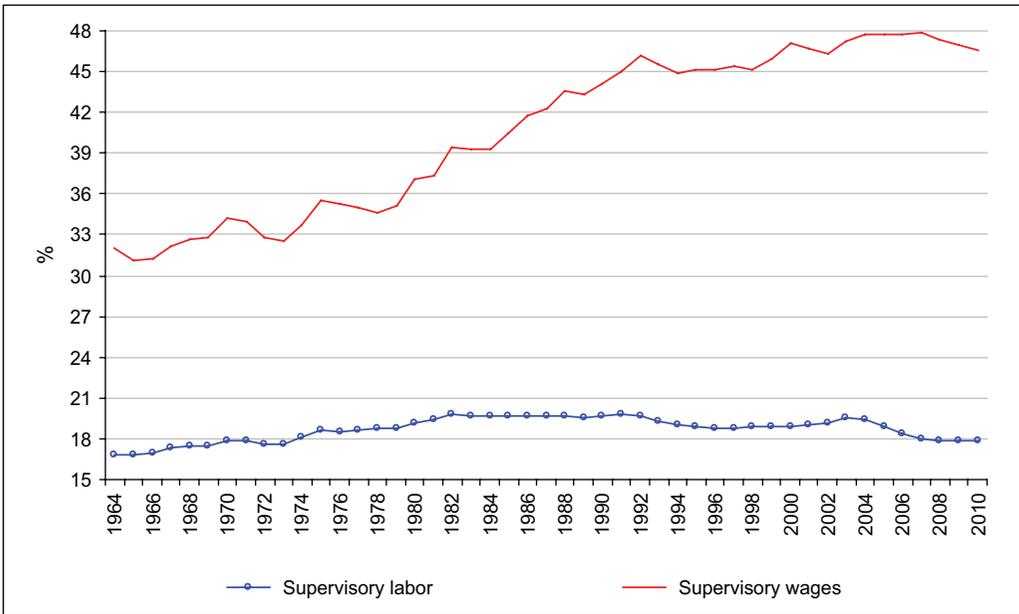


Figure 3. Supervisory Shares of Total Employment and Total Wages, United States, 1964-2010.

19.9 percent in 1991 before falling back to 17.9 percent in 2010. There is therefore not a great deal of variation in the supervisory employment share, fluctuating within a three percentage points band (and after 1973 within a two percentage points band). By contrast, the supervisory wage share of total wages behaved completely differently. Supervisory wages were just under a

third (32 percent) of total wages in 1964; there was then a gentle but fluctuating increase to 35.1 percent in 1979. Thereafter to 1992 was a period of quite extraordinary increase of some 11 percentage points, followed by a further period of gentle but fluctuating increase. The supervisory share of total wages peaked at just under half (47.8 percent) of total wages in 2007, and was 46.6 percent in 2010.

Hence the trends shown in Figure 1 are somewhat misleading. The increase in the proportion of the workforce unproductively employed is accounted for by the increase in unproductive working class employment. But both the level and the rate of change in the proportion of total wages that unproductive labor is paid is dominated by the wages of supervisory labor.

5. Shares in Money Value Added

Within the framework of this paper, a convenient way to examine whether unproductive labor is a burden on accumulation empirically is to investigate the share of aggregate value added absorbed by the wages of unproductive labor. This is because a focus on the various shares of money value added automatically takes account of changes in the rate of surplus-value. For combining equations (6) and (2) shows that $\lambda_{ip} = 1/(1+e)$, so that $e = (1 - \lambda_{ip}) / \lambda_{ip}$. Thus the rate of surplus-value can be read from the wage share in money value added of productive labor in equation (6).

Hence rewrite equation (1) in terms of shares, so that

$$1 = \frac{W_p}{Y} + \frac{W_u}{Y} + \frac{\Pi}{Y} \tag{11}$$

Since unproductive labor is constituted by the unproductive working class and by supervisors, call the wages of the former W_u^{wc} and those of the latter W_u^s . Then equation (11) becomes

$$1 = \frac{W_p}{Y} + \frac{W_u^{wc}}{Y} + \frac{W_u^s}{Y} + \frac{\Pi}{Y} \tag{12}$$

which can be written either in terms of class shares, working class and non-working-class,

$$1 = \left(\frac{W_p}{Y} + \frac{W_u^{wc}}{Y} \right) + \left(\frac{W_u^s}{Y} + \frac{\Pi}{Y} \right) \tag{13}$$

or in terms of productive and unproductive labor

$$1 = \frac{W_p}{Y} + \left(\frac{W_u^{wc}}{Y} + \frac{W_u^s}{Y} \right) + \frac{\Pi}{Y} \tag{14}$$

where

$$\frac{MSV}{Y} = \frac{W_u}{Y} + \frac{\Pi}{Y} = \left(\frac{W_u^{wc}}{Y} + \frac{W_u^s}{Y} \right) + \frac{\Pi}{Y} \tag{15}$$

Figure 4 shows the temporal evolution of the shares in money value added for the components of unproductive labor: the unproductive working class (W_u^{wc} / Y) and supervisors (W_u^s / Y). In 1964, the unproductive working class (about 60 percent of all unproductive labor, 30 percent of the total working class, and 25 percent of total employment) absorbed 12.9 percent of money value added. In 2010, the unproductive working class (about 62 percent of all unproductive labor, 36 percent of the total working class, and 30 percent of total employment) continued to absorb 12.9 percent of money value added. This absorption ratio barely changed over the whole period: the

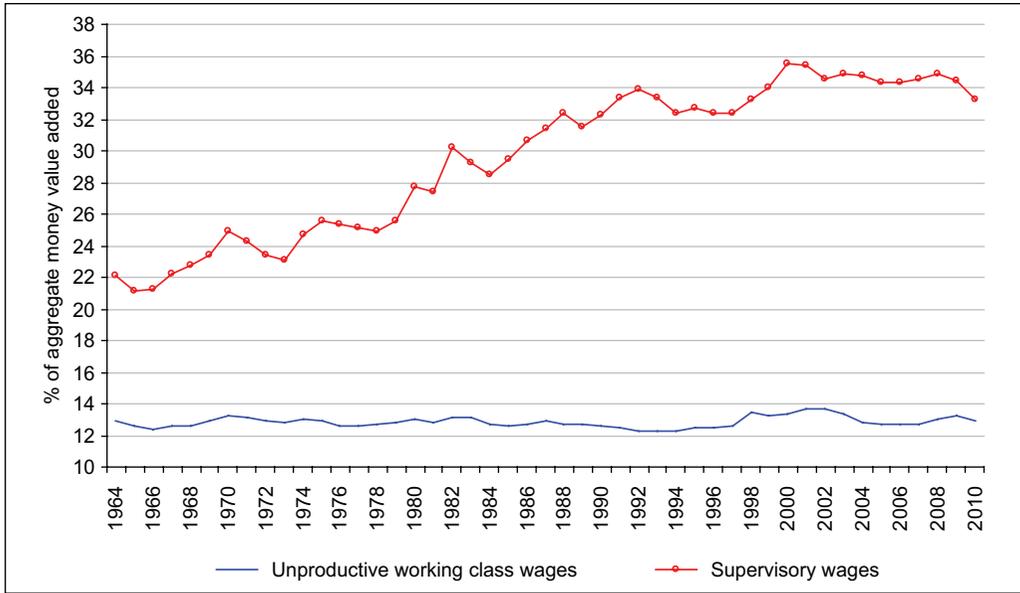


Figure 4. Unproductive Wage Shares of Money Value Added, United States, 1964-2010.

mean is 12.8 percent and the standard deviation is 0.34 percentage points. *Hence the burden to accumulation posed by the unproductive working class did not change over the whole period of 46 years.*

The same cannot be said about supervisors. Supervisory wages absorbed 22.1 percent of money value added in 1964. At the peak of 2000, supervisors (39.1 percent of all unproductive labor and 18.9 percent of total employment) absorbed 35.5 percent of money value added, an increase of some 60 percent, with most of the increase occurring between 1978 and 1992. Comparing 2000 with 1964, some 13.5 percentage points *less* of value added was available for working class (productive and unproductive) wages and for profits.

Now recall the quotations in the introduction to this paper. That by Paitaridis and Tsoulfidis was typical:

unproductive activities are a burden to capital accumulation, because they reduce the amount of social product that can be invested productively. Thus, the higher the share of unproductive activities in the economy's social product the less is left to be invested productively and thus the lower the capital accumulation....We expect that past a certain point the expansion of unproductive activities is not sustainable for it interferes with the normal process of capital accumulation (Paitaridis and Tsoulfidis 2012: 215-16, 217)

For the U.S. economy, the empirical evidence emphatically contradicts this position: the only unproductive activities that might be deemed a burden are the supervisory activities that administer and control the working class. Only these activities have absorbed additional money value added. Whether they are indeed a burden depends also on what has happened to the productive labor share and the profit share.

Before exploring the productive wage share of value added, consider Figure 5, depicting the share of productive labor in total employment and total wages (analogous to figures 1, 2, and 3). The share of productive labor in employment in 1964 was 58 percent and fell to just over 52

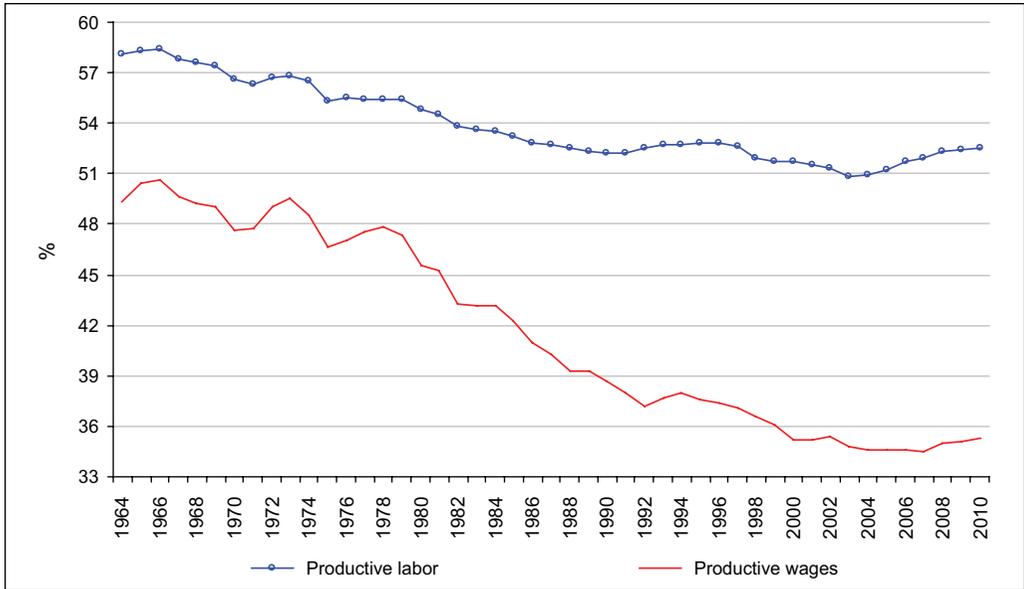


Figure 5. Productive Working Class Shares of Total Employment and Total Wages, United States, 1964-2010.

percent in 1989, and thereafter fluctuated within a less than 2 percentage points range. The share of productive wages in total wages fluctuated within a three percentage points range from 1964 to 1973 (between 47.6 percent in 1970 and 50.6 percent in 1966), fluctuated downwards in the mid-70s to 47.4 percent in 1979, and then collapsed by 10 percentage points to 1992. It then fell more gently through the 1990s to 35.2 percent in 2000, and was roughly constant thereafter. So the employment change was not dramatic, and largely within the working class, from productive to unproductive labor. The wage change was much more dramatic, in which the unproductive working class (marginally) and the productive working class (spectacularly) lost wage share to supervisors.

Now consider the wage share of productive labor in money value added. By equation (6) this is the value of labor-power per hour of labor hired, and is depicted in Figure 6. This graph is remarkable for several reasons. First, from 1964 to 1979, the value of labor-power was approximately constant and hence the rate of surplus-value was similarly approximately constant. Figure 4 showed that the wage share of the unproductive working class was also approximately constant over the same period. Hence the whole working class wage share of value added was approximately constant. But Figure 4 also showed that from 1964 to 1979 supervisory wages increased by some 3.5 percentage points of value added. Hence this rise in supervisory wage share of value added can only have been at the expense of the profit share. While there was thus a continuing profit squeeze over the 15 years after 1964, the working class was not proximately involved in the squeezing. Rather, the working class remained sufficiently strong to prevent any increase in the rate of surplus-value. With a stalemate in class struggle, as managers-plus-capitalists increased their labor income share of money value added, it could only be at the expense of their profit income. This was hardly a viable long-run strategy, and the class stalemate characterizing the 1964-79 period was decisively ended in the neoliberal assault on the working class, beginning with the Volcker interest rate rise in the autumn of 1979.

Second, by 2007 the value of labor-power had fallen by almost 10 percentage points of value added. Since the wage share of the unproductive working class was approximately constant, then



Figure 6. Productive Wage Share of Money Value Added (Value of Labor-Power), United States, 1964-2010.

this fall in the value of labor-power was also the fall in the wage share of the whole working class. The weak rise in the profit share in the era of neoliberalism has often been noted. But the reason is clear. Almost all of this change in share of money value added was absorbed by the rising supervisory wage share: managers-plus-capitalists increased their labor income share of money value added through a very significant rise in the rate of exploitation, and almost none of the rise in the rate of exploitation fed through into a rise in the profit share. That is, the assault on the organized working class, the implementation of a major deregulatory agenda, the deliberate reversal of major portions of the weak social democracy that had been put in place by the New Deal and World War II years, and the embrace of globalization and financialization, all served to engineer a large rise in the rate of surplus-value, and this enabled the extraordinary rise in the labor incomes of managers-plus-capitalists. This was very different from the early 20th century years described by Duménil and Lévy (2004) above. In the latter, the causation went from reorganization to an increase in the rate of surplus-value. By contrast, in the neoliberal era after 1979, the causation went from a rise in the rate of surplus-value (through an assault on the organized working class and a dismantling of (weak) social democracy) to a rise in the labor incomes of managers-plus-capitalists.

This suggests a reconsideration of the profit rate and the effects upon it of rising unproductive labor. Because consideration of shares is so important, it is more convenient to decompose the profit rate into the product of profit share and capital productivity (rather than the “Marxian” decomposition of equation (14) above). Hence

$$r = \frac{\Pi}{Y} \frac{Y}{K} = \frac{MSV - W_u}{Y} \frac{Y}{K} = \left(\frac{MSV}{Y} - \frac{W_u^s}{Y} - \frac{W_u^{wc}}{Y} \right) \frac{Y}{K} \tag{16}$$

Since (analogous to equation (10)) the *MSV* share can be written as

$$\frac{MSV}{Y} = \frac{Y - W_p}{Y} = \frac{p_y y - w_p H_p}{p_y y} = \frac{\frac{y}{H_p} - \frac{w_p}{p_y}}{\frac{w_p}{p_y}} \quad (17)$$

then (as before) provided the difference between labor productivity and the real wage rate (of productive labor) is large enough, the deleterious effects of the unproductive wage share on the rate of profit can be avoided.

But this is now distinctly odd. For the working class unproductive wage share has been constant. Hence provided that the margin between labor productivity and the real wage rate (of productive labor) is large enough, the rate of profit will not be adversely affected by the rising labor income share of managers-plus-capitalists. But, *in class terms*, whether capitalists and their managerial agents appropriate increasing quantities of unpaid labor as their own labor income, leaving the residual for profits, has little to do with the burden of unproductive labor as traditionally conceived. Yet it is central to the class inequalities of the contemporary neoliberal era as they have developed since 1979. This in turn suggests that a rate of profit *in class terms* might be more appropriately defined as

$$r_{class} = \frac{\Pi + W_u^s}{K} = \frac{\Pi + W_u^s}{Y} \frac{Y}{K} \quad (18)$$

The fall in the value of labor-power (rise in the rate of surplus-value) after 1979 financed a large rise in the supervisory wage share and only a meager rise in the profit share, but *in class terms* that distinction is not relevant. That is, in class terms, this fall in the value of labor-power financed a large rise in the total income of the capitalist class and its functionaries.

Was this a burden on accumulation? This is not a simple question. First, that this large rise was primarily a rise in supervisory wages and hence personal incomes implied a large rise in luxury consumption. This was both a burden on accumulation (being consumption rather than investment) and a stimulus to the growth of luxury consumption industries, and the net effect clearly requires empirical investigation. Second, the total income of the capitalist class and its functionaries is a very broad concept, being everything that is not working class wages. To move to a study of the determinants of investment and hence accumulation requires an analysis of the determination of the retained (after tax) earnings of corporations, and their division into investment and corporate savings. This requires a much more concrete analysis, including an analysis of the state and its taxation policies, and, as mentioned above, the state's revenue and expenditure activities pose difficult problems. Finally, it is worth noting that most of this large rise in supervisory wages took place between 1980 and 2000, broadly concurrent with a period of generally rising conventional profitability from 1982 to 1997. Given the scale of the neoliberal defeat of the working class, the rise in the conventional rate of profit was hardly dramatic, but nevertheless rise it did (Duménil and Lévy 2004; Mohun 2006, 2012). Were the conventional rate of profit to fall significantly, and corporations to run into debt-financing problems, then a rising supervisory wage share of value added could not continue.¹⁴

¹⁴Indeed, after 2000 Figure 4 shows that it did not. But this implies nothing about the time-path of the conventional rate of profit after 2000, because the latter is proximately determined by the joint effect of the profit share and capital productivity. A rising share of value added appropriated by the capitalist class and its functionaries can comprise a stationary supervisory wage share and a rising profit share; in such circumstances what happens to profitability depends on the time-path of capital productivity.

6. Conclusion

So was the rise in the wages of unproductive labor a burden? The only issue here concerns the wages of supervisory workers, and two different responses are possible. First, from 1964 to 1979, the relatively small increase in value added absorbed by supervisory wages was at the expense of the profit share, and so less was indeed available for accumulation. But from 1979 onwards this was not the case; the relatively large increase in value added absorbed by supervisory wages was financed by a large fall in the value of labor-power (large increase in the rate of surplus-value). This can only be considered a burden if it is thought that this rise in the rate of surplus-value “should” have found its way into an increased profit share.

This prompts the second response. Marxist approaches that focus on productive and unproductive labor have in fact been both misled and misleading because they have treated “wages” as the income of labor and “profits” as the income of capital in a historical era in which managers-plus-capitalists have taken more and more surplus-value as labor income rather than as profit, financed since 1979 by a large increase in the rate of surplus-value. Studies that focus on an undifferentiated category of unproductive labor systematically miss this. Further, as regards managers-plus-capitalists, it is obviously incoherent to conceive of a capitalist economy without the capital relation, although different specifications of the institutional mechanics of the capital relation are the stuff of reformist politics (and no less important for being so). This in turn suggests the importance of further research that can successfully distinguish between managers and capitalists, in order to open up a richer understanding of the dynamic of class struggle than that of a simple two-class (working class and managers-plus-capitalist class) model.

Is the productive-unproductive distinction an important one? That depends upon the questions asked. Conceptually, the distinction is central to the theoretical specification of the labor theory of value, the notion of circulation, the capital invested in circulation, the effects of that capital on overall productivity, and the incomes derived from the various circulation activities. But empirically, the issue turns out to revolve around class rather than productive and unproductive labor. So the question posed by the research of this paper is: why was it the case that from 1964 to 2010 in the U.S. economy the proportion of value added absorbed by the wages of the unproductive working class remained constant? This is an extraordinary and not at all obvious empirical regularity over some 47 years, and its explanation marks an obvious research agenda.

But there is an important consequence of this constancy. For over the whole period, the simple correlation coefficient between the productive labor wage share in value added and the working class wage share in value added is 0.99; so too is the simple correlation coefficient between the rate of surplus-value and the ratio of supervisory-wages-plus-profits to working-class wages. In an empirical class-based analysis the categories of productive and unproductive labor do not need to be separately addressed. Rather, a class approach, focusing on the working class and class struggle, is sufficient to understand the historical evolution of the U.S. economy.¹⁵ Class struggle is the corner-stone of a Marxist approach. Within this, increasing class inequality is the defining feature of the neoliberal period from 1979 to the present, and empirically the aggregate categories of productive and unproductive labor in fact obscure rather than address it.

¹⁵This is explored at some length in Mohun (2013), using equation (18). It is also worth noting that the crisis beginning in August 2007 (and continuing as of August 2012) has seen (for the most part) some convergence both within Marxist analyses, and between Marxist and (at least some) post-Keynesian approaches. This is in marked contrast to the 1970s for example. Since the productive-unproductive distinction is divisive within the Marxian tradition, the empirical analysis of this paper provides a further contribution to the convergence of progressive analyses of the current situation.

Appendix

Data Sources

<http://www.ers.usda.gov/data-products/international-macroeconomic-data-set.aspx/> (accessed July 2012)

<http://www.bls.gov/> for:

Employment Hours and Earnings from the Current Employment Statistics survey: both the current (NAICS) database for 1998-2010 and the discontinued (SIC) database for 1964-1997; (accessed August 2011)

Handbook of Methods (accessed October 2012)

<http://www.bea.gov/> for the National Income and Product Accounts (NIPA) (accessed August 2011)

Data Construction

The construction of the data follows Shaikh and Tonak (1994), as revised by Mohun (2005). But there are many approximations and assumptions underlying the construction of the data, and it is important to understand these.

Production and supervisory workers

CES, QCEW, and NIPA: Preliminaries. The Bureau of Labor Statistics (BLS) organizes a number of surveys from which are drawn a variety of earnings data. These include the National Compensation Survey (NCS) (from which are drawn the Employment Cost Index (ECI) and the Employer Cost for Employee Compensation (ECEC) data), the Occupational Employment Statistics (OES) Survey, the Covered Employment and Wages program (ES-202 program) (from which is generated the Quarterly Census of Employment and Wages (QCEW)), and the Employment, Hours and Earnings—National Current Employment Statistics, both NAICS-based (CES) and (discontinued) SIC-based. These surveys are not readily comparable, are differently constructed, have different frequencies, are used for different purposes, and in particular have different definitions of what constitutes wages.

Only CES and its discontinued SIC-based predecessor (henceforth CES for both of these, for brevity) report long runs of historical data for production and non-supervisory workers (henceforth production workers for both of these, for brevity). Since determining data for the working class involves combining CES and NIPA data, it is important to understand the differences between them.

On employment, the CES data exclude proprietors, the unincorporated self-employed, unpaid volunteer or family workers, farm workers, and domestic workers. Hence the NIPA data for “Private Industries” must be adjusted to exclude “Farms” and “Private households.” On earnings, the issues are more complex, for CES does not include stock options, tips, and bonuses (unless earned and paid regularly each pay period), other pay not earned in the pay period reported (such as retroactive pay), and payments in kind (rent, fuel, meals, etc.). By contrast, these are included in QCEW.

QCEW and NIPA. NIPA employment and earnings data are benchmarked to QCEW data, except that NIPA makes some upward adjustments. QCEW data summarize the state quarterly unemployment insurance (UI) contribution reports that are filed by employers subject to that state’s UI laws. While the UI-based data provide a near universal coverage of employment and payrolls of wage and salary workers, they also reflect somewhat differing state UI laws, so that the categories may not be consistently defined or reported across states.

In 2007, for employment in each sector, the NIPA figure is less than 2 percent higher than the QCEW figure, except for “Other services except public administration” (41.2 percent higher), “Transportation and warehousing” (7 percent higher), “Education and health services” (6.3 percent higher), “Construction” (4.4 percent higher), “Financial activities” (2.9 percent higher).

The NIPA adjust Wage and Salary Accruals to account for nonreporting and under-reporting of wages and salaries by employers: misreported wages, noncovered wages, employer-provided cafeteria plans, and wages paid overseas. In 2007, for total wage and salary accruals in each sector, the NIPA figure is less than 5 percent higher than the QCEW figure, except for “Other services except public administration” (24.1 percent higher), “Education and health services” (12.4 percent higher), “Accommodation and food services” (12.2 percent higher), “Transportation and warehousing” (8.4 percent higher), “Construction” (6.9 percent higher), “Financial activities” (6 percent higher), “Retail trade” (5.9 percent higher), and “Professional and technical services” (5.8 percent higher).

In sum, for employment in 2007, and considering sectoral NIPA less QCEW to total NIPA less QCEW, 62.5 percent of all NIPA adjustments to QCEW employment are to the two sectors “Other services except public administration” and “Education and health services.” For wage and salary accruals in 2007, again in terms of sectoral NIPA less QCEW to total NIPA less QCEW, 48.6 percent of all NIPA adjustments to wage and salary accruals are to the three sectors “Other services except public administration,” “Education and health services,” and “Accommodation and food services” (but the only sectors in which the percentage adjustment is negligible are “Utilities” and “Mining”).¹⁶

QCEW and CES. CES employment data are benchmarked to QCEW employment data; CES earnings data are sample data which are not benchmarked. Since 2007, CES has also reported hours and earnings data for all employees, and this enables direct comparison. So consider the differences between CES and QCEW in total wage and salary accruals, where the total is for the whole economy less “Agriculture,” “Private households,” and “Public administration,” and is by construction the sum of the individual NAICS components. QCEW total wage and salary accruals are 15.2 percent higher than the CES total, so that CES omits \$931,472 million of employee wage and salary accruals. Table 1 shows where the wage and salary accruals missing from CES are located in QCEW. 91.5 percent of the “missing” wage and salary accruals are in just six sectors, accounting for 36.1 percent of total employment, and these sectors are all, in terms of average pay relative to average pay in the whole nonfarm private economy, “richer” sectors of the economy.

NIPA and CES. The net effects of all of this is that, in 2007 for non-farm Private industry (excluding “Private households”), NIPA full-time and part-time employees were about 1 percent more than CES total employees, but NIPA Wage and Salary Accruals were about 21.4 percent more than the CES total earnings of all employees.¹⁷

¹⁶Table 7.18 in the NIPA reports that the biggest single adjustment to wages is for wages and salaries not covered or not fully covered by unemployment insurance. Government accounted for 42 percent of this adjustment, and the remaining 58 percent was private. Domestic waged work in Private Households (a component of “Other services except public administration”) is an obvious candidate for such adjustment. Given the size of the adjustments to “Other services except public administration,” there are likely others in that NAICS sector.

¹⁷The paper uses full-time equivalent employees (ftees), the product of the total number of employees and the ratio of average weekly hours per employee for all employees to average weekly hours per employee on full-time schedules. But this does not make a lot of difference to the working class wage calculations.

Table 1. Wages in QCEW Missing From CES.

NAICS Sector <i>i</i>	$\frac{(QCEW - CES)_i}{\sum (QCEW - CES)_i}$	Employment (% total)	Relative Mean Earnings (Accruals) (all = 100)
	(%)		
Financial activities	30.1	7.3	165.5
Manufacturing	17.9	12.3	119.7
Professional and technical services	12.7	6.8	161.2
Wholesale trade	11.8	5.3	135.8
Management of companies & enterprises	11.5	1.6	213.7
Information	7.5	2.7	154.7
Remainder of nonfarm private	8.5	63.9	75.3

Methodology of calculation of working class employment and wages. The original methodology of combining CES and NIPA data was proposed by Shaikh and Tonak (1994), and discussed and revised by Mohun (2005). The CES ratio of production workers to all workers, by sector, is applied to NIPA ftes, and summing across sectors yields total working class employment. Wage and salary accruals are then determined by sector, by multiplying CES hourly wage rates by CES hours per week, and then by 52 (assuming workers are paid for all weeks of the year), and then by the calculated employment levels. Summing across sectors yields total economy figures. Compensation of employees is derived by multiplying each accruals-based figure by the NIPA ratio of compensation of employees to wage and salary accruals, by sector. For sectors not included in CES, the relevant data is proxied as follows.

Employment.

- farms and government enterprises: use the CES ratio of production workers to all workers for “Private industry”;
- agricultural services (1964-98): use the CES ratio of production workers to all workers for “Services” (1964-98);
- forestry, fishing, and related activities (1998-2010): use the CES ratio of production workers to all workers for “Logging”;
- private households and general government: use the CES ratio of production workers to all workers for “Services” (1964-98) and for “Private service providing” (1998-2010)

Wage rates and hours per week (1964-98).

- farms and government enterprises: use CES data for “Private industry,” and weight the resulting sum by the ratio of the relevant sectoral (NIPA) compensation of employees per full-time equivalent employee (fte) to that for (NIPA) “Private industry”;
- agricultural services, private households, and general government: use CES data for “Services,” and weight the resulting sum by the ratio of the relevant sectoral (NIPA) compensation of employees per fte to that for (NIPA) “Services.”

Wage rates and hours per week (1998-2010).

- farms, forestry, fishing, and related activities, private households, general government, and government enterprises: use CES data for “Private industry,” and weight the resulting sum by the ratio of the relevant sectoral (NIPA) compensation of employees per fte to that for (NIPA) “Private industry.”

The income of the self-employed is split into wage and profit components by sector using the average compensation of employees per fte by sector. As regards the employment-related imputations in the NIPA Table 7.12, most are accounted for by “Employer contributions for health and life insurance” (line 174). Of the remainder, “Standard clothing issued to military personnel” (line 172) and “Contributions for government social insurance for federal government employees for certain programs” (line 175) apply only to general government, and so are ignored. That leaves “Food furnished to employees, including military and domestic service” (line 171) and “Employees’ lodging” (line 173) to be subtracted from Compensation of employees. The calculations assume that half of them are “allocated” to “Private households” and “General government” with weights given by ftes in “Private households” to the sum of ftes in “Private households” and “General government” (and similarly for “General government”); and half of them are “allocated” to the rest of the economy. This latter half is “allocated” to each sector according to the weight (by fte) of that sector in the whole economy (excluding “Private households” and “General government”), and then subtracted from the relevant sectoral figure for Compensation of employees. While defensible, this procedure is quite arbitrary; fortunately the numbers involved are very small indeed, and any other reasonable sectoral allocation and subtraction of imputations would make no substantive difference at all. Finally, all imputations except “Employer contributions for health and life insurance” are excluded from value added in money terms Y .

Methodology of calculation of supervisory employment and wages. Employment and wages of supervisors are calculated by subtraction of the working class totals, by sector, from the NIPA totals for ftes, for wage and salary accruals, and for compensation of employees. This allocates all of the wages missing from CES to supervisory workers. This accounts for stock options, bonuses, retroactive pay, and the like (presumably widely used in the six sectors listed in Table 1), for these sorts of payments typically do not accrue to the working class. It is less reasonable to make such an allocation for irregular tips, free rent, fuel, meals, and other payment in kind. For example, tips will have some importance in “Accommodation and food services,” some “Transportation and warehousing” (taxis), and some “Other services except public administration” (barber shops and beauty salons). Irregular pay is often omitted from individual tax returns, and in 2007 the NIPA adjusted QCEW wages upwards by \$95.7 billion (1.6 percent) to cover misreporting on employment tax returns (NIPA Table 7.18). But this is only 10 percent of the missing CES wages. It is evidently a major assumption to allocate all of the missing CES wages to supervisory workers, but it does not seem an unreasonable approximation.

How reliable is the production worker/supervisory worker distinction? There are two issues here, the first concerning data coverage and the second concerning data reliability. As regards data coverage, whereas in all other (“Private service-providing”) industries, nonproduction workers are executive, managerial, and supervisory workers, this is not true in “Mining,” in which the category “production workers” additionally excludes those working in finance (including accounting, collection, and credit), trade (purchasing, sales, and advertising), personnel, cafeterias, and professional or technical positions (including legal and medical). Neither is it true in “Construction,” which also excludes those working in clerical positions; nor “Manufacturing,” which, as well as all categories excluded in “Mining” and “Construction,” also excludes those working in product installation or servicing, recordkeeping not related to production, delivery as well as sales, and force account construction¹⁸ (BLS 2009: ch. 2, Concepts, and appendix). This entails that “supervisory workers” in “Mining,” “Manufacturing,” and “Construction” include employees who do not perform supervisory functions. Since these three industries comprised 40.3

¹⁸Construction work performed by an establishment, engaged primarily in some business other than construction, for its own account and for use by its employees.

percent of employment in nonfarm private industries in 1973, a proportion that had halved by 2007, the numbers of supervisory workers are overestimated, and by an indeterminate amount, although decreasing with the declining employment weight of “Mining,” “Manufacturing,” and “Construction” through time. For averages, this does not matter very much on the assumption that those “wrongly” classified to supervisory status do not have weekly earnings very different from the average for production workers in the relevant sector, which does not seem implausible. But it does mean that the totals for employment and wages of production workers are underestimated.

As regards data reliability, BLS proposed in 2004 to introduce new series on hours and earnings for all employees, and consequently to discontinue *inter alia* production/non-supervisory worker hours and earnings series. It gave three reasons. First, the limited scope of the latter made them of limited value in analyzing economic trends. Second, the data were increasingly difficult to collect because the categorizations were not meaningful to survey respondents. Third, because the survey sample was so large and because responses had to be collected within a very short timeframe, it was not feasible to collect more than a small number of elements on the CES survey (Federal Register 2005).

However, the BLS rationale was not especially convincing. First, on scope, because of the five month time lag before QCEW data become available, the NIPA extrapolate quarterly and monthly wages and salaries from CES data (which is available about a week after the end of a particular month), adjusting the monthly extrapolator to account for the difference in coverage between the QCEW data and the CES data (Moylan 2008). Second, on difficulties of classification, these obviously exist, but permeate a lot of BLS data. For example, the OES define “working supervisors” as “those spending 20 percent or more of their time doing work similar to the workers they supervise” (BLS 2009: ch. 3). Further, “Supervisors of professional and technical workers usually have a background similar to the workers they supervise, and are therefore classified with the workers they supervise. Likewise, team leaders, lead workers, and supervisors of production, sales, and service workers who spend at least 20 percent of their time performing work similar to the workers they supervise are classified with the workers they supervise” (*ibid.*: ch. 8). It is hard to understand how the distinction between working supervisors and other supervisors does not suffer from the same problem as BLS attributed to distinguishing production workers and supervisory workers. But conceding this might problematize rather a lot of BLS’s occupational data. And third, on resources, this seems to have more the flavor of bureaucratic infighting than anything analytical.

In the event, the new series were introduced as planned in 2007, but the production and non-supervisory series were not discontinued. Classifications might be difficult for respondents, but it is not obvious that such difficulties have been changing over time, so that it is not unreasonable to presume that time trends in the data are not adversely affected by such difficulties.

Classification of Productive and Unproductive Labor

Tables 2 and 3 list the allocation by industry to productive and unproductive sectors. The construction of Table 1 presumes that the change from the 1973 SIC (which covers the data from 1964 to 1986) to the 1987 SIC (for the data from 1987 to 1997) makes no significant difference.

The construction of both tables entails the exercise of judgment, especially with respect to subdivisions of the NAICS categories 54 (Professional, scientific and technical services) and 56 (Administrative and support and waste management and remediation services), but these subdivisions are generally very small relative to the totals, and disagreements as to their allocation will make a negligible difference. Categories enclosed in square brackets are not included in a pre-tax analysis (because of double-counting).

Table 2. Productive and Unproductive Components, SIC 1973 and SIC 1987.

SIC	Productive	SIC	Unproductive
	Farms		
	Agricultural services, forestry, fishing		
10-14	Mining		
15-17	Construction		
20-39	Manufacturing		
40-42, 44-49	Transport., public utilities		
		50-51	Wholesale trade
58	Retail trade: Eating & drinking places	52-57, 59	Remainder of Retail trade
		60-65, 67	Finance, insurance, real estate
	Services:		Services:
70	Hotels and other lodging places		
72	Personal services		
	Business services:		Business services:
		731	Advertising
		732	Credit reporting & collection
733	Mailing, reprod'n, stenographic		
734	Services to buildings		
		735	Misc. equipment rental, leasing
		736	Personnel supply
737	Computer & data processing		
		7381	Detective & armored car
		7382	Security systems
7384	Photofinishing laboratories		
		Remainder 73	Residual business
75	Auto repair, services, & parking		
76	Miscellaneous repair		
78	Motion pictures		
79	Amusement & recreation		
80	Health		
82	Educational		
83	Social		
	Misc. professional\Other:		Misc. professional\Other:
871	Engineering & architectural		
		872	Accounting, auditing, bookkeeping
873 excl. 8733	Research & testing	8733	Noncommercial research orgs
		874	Management, public relations
	Government enterprises		
			[Private households]
			[General government]

Table 3. Productive and Unproductive Components, NAICS 1998 et seq.

NAICS	Productive	NAICS	Unproductive
11	Agric., forestry, fish. and hunt.		
21	Mining, quarrying, oil & gas extraction		
22	Utilities		
23	Construction		
31-33	Manufacturing		
		42	Wholesale trade
		44-45	Retail trade
48-49	Transportation & warehousing		
51	Information		
	Professional, scientific, technical services	52	Finance, insurance
		53	Real Estate, Rental, Leasing
			Professional, scientific, technical services
		5411	Legal
		5412	Accounting, tax prep., bookkeeping, payroll
5413	Architectural, engineering, & related		
5414	Specialized design		
5415	Computer systems design & related		
		54161	Management consulting
54162	Environmental consulting		
54169	Other scientific & technical consulting		
5417	Scientific research and development		
		5418	Advertising, public relations, & related
5419	Other professional, scientific, technical		
	Administrative & support		Administrative & support
		5611	Office administrative services
		5612	Facilities support services
		5613	Employment services
	Business support services		Business support services
56141	Document preparation services		
561421	Telephone answering services		
		561422	Telemarketing bureaus etc.
56143	Business service centers		
		56144	Collection agencies
		56145	Credit bureaus
		56149	Other business support services
5615	Travel arrangement, reservation services		
		5616	Investigation & security services
5617	Services to buildings & dwellings		
5619	Other support services		
562	Waste management & remediation services		
61	Educational services		
62	Health care & social assistance		
71	Arts, entertainment & recreation		
72	Accommodation & food services		
	Other services (except Public admin.)		Other services (except Public admin.)
811	Repair & maintenance		
812	Personal & laundry services		
		813	Relig., Grantmaking, Civic, Prof., etc.
		[814]	[Private households]
		[92]	[Public administration]

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