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Abstract

Drawing inspiration from the work of Gouverneur (1983, 1990), this paper examines the impact of work time regulation on workers in the private sector using data extracted from the UK Office for National Statistics website. Using a Marxian conceptual framework and a Quantitative Marxian methodology it assesses the pattern of surplus-value before and during the period of office of the New Labour governments, 1992-2009. Although many left-commentators have been sceptical concerning the record of these governments, policies such as the reintroduction of a national minimum wage, the Working Time Regulations (1998, 2002, 2007), and the Work-Life Balance Campaign (2000) are noteworthy innovations in the labour market. The present paper assesses the pattern of distribution and work-time in the relevant period, before considering how this work can be developed to provide a rigorous empirical analysis of contemporary capitalism.

Keywords: Work time, Quantitative Marxian Economics, Capitalism

JEL Classifications: J22, B50, D13

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1. Introduction

Increased labour market regulation is seen, in some quarters, as one of the elements which distinguishes the New Labour governments (from 1997 to 2010) from previous Conservative administrations. In particular, after eighteen years of Conservative rule, the first New Labour Government introduced two policies which seemed to represent a departure from the neo-liberal approach which had predominated previously. The National Minimum Wage (1998) and the Working Time Regulations (1998) were heralded by Government as important new interventions which would improve the conditions of underpaid and overworked employees.

The Working Time Regulations (WTR), with subsequent amendments in 2002 and 2007, incorporated key aspects of the European Working Time Directive (EWTD) into UK law (Directive 93/104/EC). This Directive sought to protect against the possible negative effects which long working hours have on the health of individuals (European Commission, 2005) and had been resisted by the Thatcher and Major administrations, committed as they were to supply-side policies. The main characteristics of the WTR (BERR 2008a) were: (i) a limit of 48 hours a week which the worker can be required to work, averaged over a 17 week period; (ii) a maximum average of 8 hours work in 24 for night workers; (iii) free health assessments for night workers; (iv) an entitlement to 11 hours rest each day; (v) an entitlement to a day off each week; (vi) an entitlement to an in-work rest break if the working day is longer than six hours; (vii) an entitlement to four weeks paid leave per year (pro rata for part-time employees); and, (viii) additional entitlements for adolescent workers (BERR, 2008; DTI, 2004). Alongside this framework the first New Labour Government also launched the Work-Life Balance Campaign (WLBC), in spring
2000, which aimed to raise employers’ awareness of the benefits to business from introducing policies and practices which help employees obtain a better balance between work and home (BERR 2008b). Subsequent New Labour governments developed and implemented a number of policies with the aim of aiding this process. For example, the Flexible Working Regulations (2007) enabled parents with a child under six, or a disabled child under eighteen, to make a request for flexible working.

Left-focussed economic research has been largely critical of aspects of New Labour policy. For example Brown et al (2007) have evaluated job quality and argued that the period 1998-2004 was characterised by some improvement, but this is to be attributed to low and falling rates of unemployment rather than Labour policies per se.

Although the New Labour policy on work time regulation may seem to be a departure from the neo-liberalism of the Thatcher and Major governments there are reasons to be sceptical of this claim. Crucially, the EWTD imposes a maximum normal working week of forty-eight hours (for employees). In contrast, the WTR provides an opt-out whereby employees may choose to work above this limit if they wish, thus preserving individual choice. This raises questions about the nature of choices individuals make, and the circumstances in which they make them. In particular, workers may work beyond the WTR limit because of fear (for example about job security) or coercion in the workplace (for example from managers). Moreover, other aspects of policy, related to the WLBC, seem to be incongruent with progressive intent. For example the Flexible Working Regulations (2007), mentioned previously, allow workers to request flexible working, but employers are under no duty to acquiesce to this if it is at all deleterious to their interests. In this context there is no challenge to employer power,
or State coercion if employers reject such requests on the basis of their own interests. This will form the basis of investigations subsequent to that here (for a discussion of such issues in the context of the work time preferences of managers and professionals see Wheatley 2011). In this paper, however, we focus on the patterns of work time and how they relate as a component in the distribution of income, embodied in Marx’s theory of surplus-value. In the next section we will outline a theoretical model of surplus-value, elaborating on it alongside a heuristic treatment of surplus and socially necessary labour time. In section 3 we empirically estimate the rate of surplus-value and explore it in relation to the political parties in power in the UK economy, 1992-2009. The focus is on absolute surplus-value, where we consider the relationship between falling average hours and the rate of surplus-value. In concluding we highlight the importance of the framework proposed, before reflecting on how this research can be developed to generate more robust conclusions about the political economy of recent UK capitalism.

2. Surplus-Value and Absolute Surplus-Value Production

Radical economists have been interested in the determinants and dynamics of work time since the nineteenth century. In the first volume of Capital, published in 1867, Marx paid attention to the class-based theory of work time determination (the production of absolute surplus-value), investigating it using empirical evidence and evaluating it in policy context (Marx 1976, pp.340-316). In the early stages of Britain’s industrial revolution capitalists imposed longer-and-longer working days on an unwilling labour force, culminating in regulation against this in the form of various factory acts passed from 1802 to 1850. And, partly as a result of this, emphasis shifted from extensive to intensive labour extraction — i.e. from absolute to relative surplus-
value production — in the second half of the nineteenth century (Marx, 1976, Hobsbawm, 1968). Of interest to us in this paper is whether New Labour work time policy has had any impact on the hours people work, and their satisfaction with hours.

The Marxian notion of surplus-value is central to the analysis of capitalism (for discussion of exploitation in other economic systems see Roemer 1982, 1994). We must note that in certain production systems, with particular definitions, the rate of surplus-value may deviate from the exploitation rate. In this light we will define the rate of surplus-value, then calculate a rate of exploitation, in aggregate, in a heuristic way. This will then allow us to examine the impact of changes in work time on the rate of surplus-value holding other factors — such as the real wage and technical change associated with relative surplus-value production — constant.

In order to define surplus-value let us take a simplified economy (for elaboration and discussion in the context of exploitation see Roemer 1988, pp.42-46). For a given technology \( \{A,L\} \) assume that \( A \) is an \((n \times n)\) input-output coefficient matrix and \( L \) is a \((1 \times n)\) vector of direct labour inputs used to produce each of the \( n \) commodities. We shall assume the following: \( L \) is measured by the number of employees working a given number of hours (the normal working week); the \((n \times 1)\) vector reflecting (weekly) consumption by these workers (denoted \( b \)) is purchased at equilibrium prices; these prices are given by the \((1 \times n)\) commodity price vector, \( p \). Finally, we express the wage in money terms, written \( w = pb \).
Given these definitions, and assuming that capitalists compete and only invest in lines of production that achieve the maximal profit rate, we may write the rate of profit from producing a unit of good $i$ as follows:

$$r_i = \frac{p_i - (pA_i + wL_i)}{pA_i + wL_i} \quad (1)$$

Note, $A_i$ is a column vector derived from the input-output matrix. Equation (1) is the rate of profit for good $i$, expressed as the price of one unit of good $i$, less the costs of producing it, divided by the same, i.e. the costs of the inputs (labour and raw materials). The equilibrium price vector is then derived as following:

$$p = (1 + r)(pA + wL) \quad (2)$$

We shall assume that the rate of profit has a tendency to equalise as a consequence of classical dynamics (capitalists will always seek the highest rate of return); however, what the rate of profit does not give us is a ratio of the distribution of income in the capitalist production process, and it is this which Marx’s rate of surplus-value provides. Essentially the rate of surplus-value for a unit of commodity $i$, denoted $S_i$, is the ratio of profits to wages paid in producing that unit of output.

Using logic analogous to that in equation (1), we may write the rate of surplus-value for a unit of a particular good $i$ as follows:

$$S_i = \frac{p_i - (pA_i + wL_i)}{wL_i} \quad (3)$$

Note, the rate of surplus-value is only going to be equal between sectors in particularly unusual circumstances. Logically, in calculating rates of return from producing a commodity, capitalists are indifferent between profits which are a return to an outlay on raw materials ($pA_i$ in the case of good $i$), or those generated by wage-
labour \((wL_i)\). Since the rate of profit has a tendency to equalise divergence in the ratio of the former to the latter, between sectors, causes deviations in \(S\) across the capitalist economy. In this situation the rate of surplus-value will emerge as a vector reflecting differences in the ratio of \(pa_i\) to \(wL_i\) (which is analogous to the organic composition of capital, in the absence of fixed capital, in Marx’s system). On this basis, in formulating a rate of surplus-value in the capitalist macroeconomy, we derive the rate in aggregate \((S)\), reflecting class-based distribution in such activity.

This aggregate rate is equal to the sum of profits to wages paid in the capitalist macroeconomy (i.e. we exclude public sector wages which are generally paid out of tax revenues), where the constituent element unit levels are multiplied by an activity vector \((y)\). If \(y_i\) is the output level for commodity \(i\) we may write:

\[
S = \frac{\sum_{i=1}^{n} y_i (p_i - (pa_i + wL_i))}{\sum_{i=1}^{n} y_i wL_i} \tag{4}
\]

That is the rate of surplus-value (measured in aggregate) is equal to the ratio of aggregate profits to wages paid in the capitalist economy.

In order to examine changes in the rate of surplus-value consequent upon a change in the length of the average working day we will adopt a heuristic definition of surplus labour time and necessary labour time. These will be defined using aggregate profit \((R)\) and aggregate private sector wages \((W)\), allocating the average length of the working day for workers in private sector employment between then in proportion to these income streams. Where aggregate profits and private sector wages are given as follows:

\[
R = \sum_{i=1}^{n} y_i (p_i - pa_i) - W \tag{5}
\]

\[
W = \sum_{i=1}^{n} y_i wL_i \tag{6}
\]
Socially necessary labour time (\(i^\ast\)) for a private sector worker is defined thus:

\[
i^\ast = \frac{W\dot{h}}{R + W}
\]  

(7)

And, the level of surplus labour time for an average worker is given by:

\[
i^\ast\prime = \frac{R\dot{h}}{R + W}
\]  

(7)

On the basis of these definitions it is possible to use \(i^\ast\) from a base year and look at the effect of a change in the average working day in subsequent years, isolating this effect from other drivers of surplus-value production (for example relative surplus-value production and changes in the real wage). That is, to isolate absolute surplus-value we will hold \(i^\ast\) constant and calculate the rate of surplus-value using the actual working day less \(i^\ast\) in the base year, deriving an inferred level of \(i^\ast\prime\) as a residual.

3. A Heuristic Approach to Surplus-Value

There have been a number of attempts to empirically investigate trends in the rate of surplus-value (e.g. Weisskopf 1979, Moseley 1988, Gouverneur, 1983, 1990, Shaikh and Tonak 1994). Our approach is distinct because of the time-frame being investigated and the data being used. In order to examine the effect of changes in working hours on the rate of surplus-value we will take a base year of 1992 and define
surplus-value as the sum of the gross operating surpluses of financial, public limited and private limited companies in the UK economy (NQNV+NRJT+NRJK in Table 1). Variable capital will be estimated using the aggregate compensation of employees (HAEA) multiplied by the proportion of workers engaged in private sector employment (DB37). This then allows us to derive the rate of surplus-value ($S$), as in equation (4), as the ratio of surplus-value to variable capital. Note, NQNV, NRJT, NRJK, HAEA and DB37 correspond to the data codes used by the UK Office for National Statistics. Percentage point changes in this rate are outlined in Figure 1. Of particular note are the rises in the surplus-value rate in the period of the Conservative administration (to 1997), and the falls in the surplus-value rate which coincided with the first term New Labour Government, 1997-2001. Although the surplus-value rate rose somewhat in the second term of the New Labour Government these rises were not as great as had been the case in the period 1992-1996.

In order to deduce an operational definition of surplus and socially necessary labour time, to fully assess the process of absolute surplus-value production, we will take aggregate surplus-value and aggregate variable capital and re-express it in per capita private sector worker terms ($r$ and $w$ respectively in Table 1). This will then allow us to allocate average hours worked (ONS code lfs5AC) between capitalists and workers in proportion to the share of gross private sector income accruing to each respective class. This provides us with a heuristic measure of socially necessary labour time ($i\bar{i}$) and surplus labour time ($i\bar{i}^*$) per worker.
### Table 1: A Heuristic Approach to Surplus and Necessary Labour Time for the UK Economy, 1992-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>HAEA</th>
<th>NQNV</th>
<th>NRJT</th>
<th>NRJK</th>
<th>DR37</th>
<th>S</th>
<th>dS</th>
<th>CZG8</th>
<th>r</th>
<th>w</th>
<th>lfs5AC</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>S*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>3.475E+11</td>
<td>1.230E+10</td>
<td>5.962E+09</td>
<td>1.036E+11</td>
<td>0.769</td>
<td>45.582</td>
<td>19649000</td>
<td>119.231</td>
<td>261.574</td>
<td>33.1</td>
<td>22.736</td>
<td>10.364</td>
<td>10.400</td>
<td>45.5829</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>3.860E+11</td>
<td>1.580E+10</td>
<td>8.880E+09</td>
<td>1.416E+11</td>
<td>0.792</td>
<td>54.392</td>
<td>20436000</td>
<td>156.490</td>
<td>287.708</td>
<td>33.3</td>
<td>21.568</td>
<td>11.322</td>
<td>10.564</td>
<td>46.4624</td>
<td></td>
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<tr>
<td>1997</td>
<td>4.300E+11</td>
<td>2.099E+10</td>
<td>7.229E+09</td>
<td>1.694E+11</td>
<td>0.805</td>
<td>57.103</td>
<td>21328000</td>
<td>178.213</td>
<td>312.088</td>
<td>33.2</td>
<td>21.133</td>
<td>12.067</td>
<td>10.464</td>
<td>46.0226</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>4.958E+11</td>
<td>1.801E+10</td>
<td>7.664E+09</td>
<td>1.765E+11</td>
<td>0.807</td>
<td>50.522</td>
<td>21903000</td>
<td>177.479</td>
<td>351.291</td>
<td>33.0</td>
<td>21.924</td>
<td>11.076</td>
<td>10.264</td>
<td>45.1429</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>5.642E+11</td>
<td>1.297E+10</td>
<td>6.879E+09</td>
<td>1.832E+11</td>
<td>0.805</td>
<td>44.697</td>
<td>22307000</td>
<td>175.006</td>
<td>391.543</td>
<td>32.8</td>
<td>22.668</td>
<td>10.132</td>
<td>10.064</td>
<td>44.2633</td>
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<tr>
<td>2002</td>
<td>5.874E+11</td>
<td>2.713E+10</td>
<td>6.586E+09</td>
<td>1.884E+11</td>
<td>0.803</td>
<td>47.099</td>
<td>22382000</td>
<td>190.877</td>
<td>405.270</td>
<td>32.3</td>
<td>21.958</td>
<td>10.342</td>
<td>9.564</td>
<td>42.0641</td>
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</tr>
</tbody>
</table>
The aim of this paper is to explore the impact of changes in average working hours in terms of Marx’s theory of surplus-value. In order to do this we will use a *ceteris paribus* approach which takes socially necessary labour time as constant (at 1992 levels), exploring what the rate of surplus-value would be were the productivity of labour and real wage held constant. Thus, we derive the series $\dot{n}''$ which is the difference between average hours in the particular year, less necessary labour time in the base year. The ratio of $\dot{n}''$ to $\dot{v}$ (in 1992) gives us an alternative rate of surplus-value ($S''$) as it is affected by changes in working hours alone from the base year onwards. This series is presented in Figure 2.

![Figure 1: Changes in the UK Surplus-Value Rate, 1992-2009](image-url)

Comparison of $S$ and $S''$ provide an interesting illustration of the impact of falling hours on distribution. In 1996, $S''$ peaks at 46.46%, before it begins to fall in a sustained manner, reaching 38.55% in 2009. This suggests that UK government policy from 1997 onwards may well have been influencing a sustained period of negative absolute surplus-value production associated with policy innovations. And,
this can be contrasted with the period of Conservative government predating the period of our investigation, where lengthening hours and were a hallmark of Thatcherite government (Philp 2001).

![Figure 2: Surplus-Value in the UK Economy, 1992-2009](image)

**Figure 2: Surplus-Value in the UK Economy, 1992-2009**

4. Conclusion and Plans for Development

This paper is a tentative piece, which uses publically-available data to examine the rate of surplus-value and assess the process of absolute surplus-value in period 1992-2009. In spite of the limitations of the data, the results are clear and interesting:

1. The period we associate with the first term of the New Labour Government, 1997-2001, coincided with a period when there were profound gains for workers in terms of surplus-value rates and the associated conflict over the distribution of gross incomes.
2. From 1996-1999 there were modest falls in the average duration of work-time for UK workers. From 1999-2009 this downward trend continued, and in some years falls was particularly pronounced.

3. The implication of falling hours was a process of negative absolute surplus-value production. Once the effect of changes in the real wage and relative surplus-value production (associated with productivity increase) are stripped out we can identify a hypothetical rate of surplus-value of 38.55% for 2009, rather than the actual rate of 51.51%.

The rate of surplus-value rose somewhat in the period after the initial fall associated with the first-term New Labour Government. This, however, is driven by forces other than absolute surplus-value production which impacted it negatively. This may be analogous to the impact of work-time regulation on the British economy in the nineteenth century, as capitalists shifted their focus to relative surplus-value production in the second half of that century.

Finally, the analysis of this paper must be understood in terms of the limits of the data used. Somewhat unsatisfactory measures for many variables have been used to establish the viability of the model and decomposition. In developing this work it is our intention to use more suitable measures of variables (such as work-time, the proportion of private sector employment, private sector wages) which will allow a more nuanced examination of the movements in the surplus-value rate as they are driven by changes in working hours. By extracting and collating data from the full panel of the Labour Force Survey (LFS) we will be able to derive a more robust
treatment with quarterly observations. Moreover, by deriving averages from the LFS it will allow us to link absolute surplus-value production to the extremely important issue of satisfaction with hours, as it pertains to different groups of workers. This will build on our previous studies (see Philp and Wheatley, 2011; Wheatley, Hardill and Philp 2011) of particular occupational groups.
References


Appendix 1: Statistics Sources

<table>
<thead>
<tr>
<th>Definition</th>
<th>ONS Code</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross operating surplus: financial corporations</td>
<td>NQNV</td>
<td>ONS Website</td>
</tr>
<tr>
<td>Gross operating surplus: NFCos: private</td>
<td>NRJK</td>
<td>Accessed 2nd December, 2010</td>
</tr>
<tr>
<td>(NSA): £Million.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross operating surplus: NFCos: public: (NSA) £Million.</td>
<td>NRJT</td>
<td></td>
</tr>
<tr>
<td>Total compensation of employees (NSA): £Million.</td>
<td>HAEA</td>
<td></td>
</tr>
<tr>
<td>Private sector employment as a proportion of the total (annual)</td>
<td>DB37</td>
<td></td>
</tr>
<tr>
<td>Private sector employment: Thousands</td>
<td>CZG8</td>
<td></td>
</tr>
<tr>
<td>Mean weekly total actual hours worked for employees whose main</td>
<td>Ifs5AC</td>
<td></td>
</tr>
<tr>
<td>job is in the private sector.</td>
<td></td>
<td></td>
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</table>