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ABSTRACT

Some Welfare Economics of Working Time

Few skilled workers in the UK have flexible working time – GPs are the exception – most can only choose between unemployment, or full-time work, which has changed little in recent years, while part time work is mainly unskilled. This market rigidity imposes major welfare losses, in contrast to flexibility of worktime for all in the Netherlands, which has the best work-life balance. Stagnating real wages and rising employer market power and inequality follow declining unionisation, but a standard four-day week, tax reform, basic income, and flexibility rights for all could reverse these trends and provide major welfare gains.

JEL Classification: D63, J22, H23

Keywords: working hours, relative income, labour share, basic income

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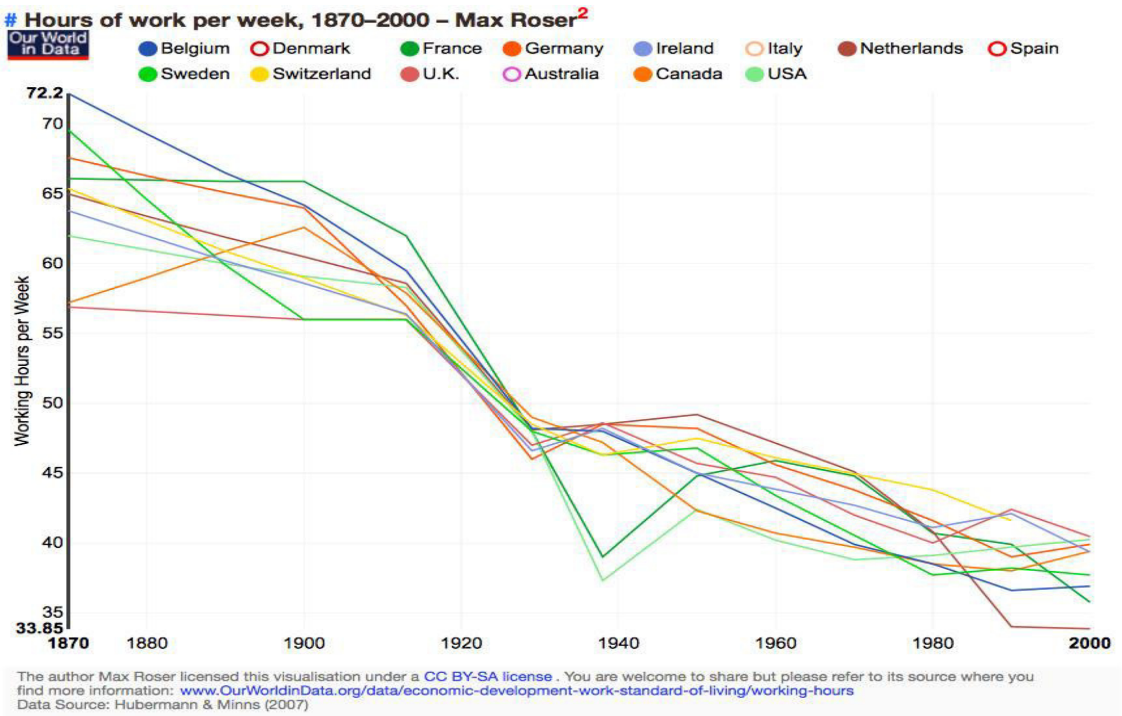
1. Introduction

The Neolithic Revolution about 11,700 years ago marked the transition from hunter-gatherer or forager society to permanent settlements and agriculture, together with a rapid increase in population, simultaneously in several parts of the world (Suzman, 2020). However, 'a puzzling and counterintuitive finding, based on archaeological and anthropological evidence is that hunters and gatherers seem to have had better nutrition, fewer diseases, more varied diets, less strenuous labor for only 3 – 5 hours daily, and longer lives than contemporaneous farm households' (Sachs, 2020; Wilson, 2019). The consensus is that worktime increased substantially in the earliest agricultural societies compared to their forager forebears.

The next big jump in worktime began about two centuries ago with the first industrial revolution. Formerly independent peasant farmers and tenants, displaced from their land by enclosures and clearances, were forced into the working days of 10 to 16 hours and six-day weeks of 19th century industrialisation, a development that has been neglected by prominent economic historians such as Crafts (1985), who have focused on (real) wages as the sole determinant of 'the standard of living'. It was only Althorp's Act of 1833 that limited the hours of work of children to 12 hours a day, and the 'Ten hours Act' (1847) which restricted the hours of women and children to ten a day. Marx and Engels not only supported the bill (Tuckman, 2005), but also argued that reduction of labour time is an essential objective of human development, in order to fully enjoy free and creative life. Working time for all was only further reduced after decades of strenuous and bitter campaigning by trade unionists who were mainly Marxists and Social Democrats in the 19th and early 20th centuries (Aveling, 1890).

The pioneering socialist entrepreneur, Robert Owen (1927) was one of the first to introduce an eight-hour day at his New Lanark textile mill in the early 1800s, but it was only much later that the eight-hour day began to gain broad support, when the famous socialist reformers Sidney Webb and Harold Cox (1891) published their classic contribution, *The Eight Hour Day* in 1891. International Workers' Day, May 1, commemorates the mass demonstration in Chicago 1886 for an eight hour working day, which led to the Haymarket massacre. However, the eight-hour day and forty-eight-hour week were only widely adopted in the advanced industrial economies with the establishment of the International Labour Organisation (ILO, 1919) after the First World War, and the resulting 'Hours of Work Convention'. However, the Scottish TUC's demand for five eight work days a week only resulted in the "Battle of George Square" or "Bloody Friday" in Glasgow 1919. The graph below summarises briefly how working hours evolved over a century in western countries.

Figure 1: Working hours per week of major western countries [3]



[3] https://blog.capitalogix.com/public/2015/01/how-the-average-hours-worked-per-week-decreased-in-the-the-last-150-years.html.

It was only in 1936 that paid summer holidays were introduced in France under socialist prime minister Léon Blum (Broder, 2021), but they quickly followed in Britain and other advanced economies.

Even before Brexit there was a strong contrast between the UK's long-hours culture and the rest of EU, which has aspired to a 35-hour work per week since the 1993 European Working Time Directive (93/104/EC) (Tuckman, 2005). Average annual working hours per worker have declined in Germany from 3284 in 1870 to 1354 in 2017, while in the UK average hours have declined from 2755 to 1670 over the same time period (current hours are averaged over full time and part time workers). In Germany average working hours have fallen continuously since about 1960, from one of the highest to one of the lowest levels in Western Europe.

In contrast to other northern European countries, working time for full time workers has remained approximately constant since 1992 in the UK, at one of the highest levels in Western Europe, while average wages and productivity have stagnated since 2008, and consumer debt has increased alarmingly (Giattino et al., 2020; Castle et al, 2020). 'Full-time employees in the UK – which make up 74% of the workforce – work longer hours than full-time employees in all other EU countries except Greece and Austria. The EU average was 41.2 hours a week in 2018; the UK's is 42.5. A four-day week would reduce those hours, but investment is also needed to ensure that productivity gains follow' (*The Guardian,* 2021). Collective bargaining coverage has dropped from 71% in 1979, to 29% in 2019 under prevailing neoliberal policies (Burke, 2019), doubtless a main reason for this dismal performance.

Thus, there is considerable scope for reducing hours in the UK, and a four-day week would reduce commuting time, raise job-satisfaction and in many cases can raise productivity because so much regular working time is unproductive and workers are better rested and more energised after a three-day weekend – a likely 'win-win' change according to Bloomberg (2021) and several comprehensive recent studies (Barnes, 2020; Coote et al, 2021; Grosse, 2018; Messenger, 2018**;** Kallis et al, 2013; Kallis et al, 2020; Spencer, 2019; 2015). However, such a change will require extensive campaigning and popular support like all previous reductions in working hours, and ultimately national legislation to overcome strong opposition from employers.

In situations with shortages, flexibility and part time work can of course have serious downsides. 'The UK has on**ly** 2.8 doctors per 1,000 people, compared with an average of 3.5 doctors across the OECD, and the UK shortage is second only to Poland**.'** (Skopeliti, 2019). According to the BMA (2021), **'**There are actually now 1,803 fewer fully qualified FTE GPs today than there were in 2015', and nearly 90% of GPs work only part time.

The standard five-day week in advanced economies only followed after the Second World War, and since then work time has steadily declined as average real incomes have grown in many countries (Doltan, 2017; Giattino et al, 2020). However, the trend has been slowing down or even reversing sometimes. Competition for promotion in hierarchical organisations often generates excessive hours to signal commitment and performance, and many workers in the UK have to accept unpaid overtime (Sellers, 2019), while highest paid, top managers typically also work long hours (Frederiksen et al, 2018), but their pay has exploded in recent decades. In contrast, real wages for most workers have stagnated or even declined since the 1980s in the US, and since the financial crash of 2008 in the UK. Most of the benefits of growth have gone to the highest earners, especially the top 1%, whose share of national income has doubled to reach the highest level since the 1920s over the past four decades (IFS, 2019).

2. *Irrational Overwork*

Ironically, in a reversal of the secular trends, the highest paid workers in the 21st century often have the longest hours (Costa, 2000), and a group of junior bankers presumably hoping to become highly paid at Goldman Sachs have recently complained of 'inhumane' working conditions and a 96-hour average work week (Makortoff, 2021). Likewise, but not limited to a few elite employees, "karoshi" (death from overwork) remains a serious problem in Japan despite various government regulations as those employees usually declare their overtime work is "voluntary". A similar or worse situation exists in emerging markets and on an even larger scale. The Alibaba founder and richest man in China Jack Ma famously uses the word "blessed" to characterise those Chinese employees who work on a rather common "996" schedule, 9 a.m. to 9 p.m., 6 days a week.

All this obviously throws doubt on Keynes's (1930) prediction that people would work only 15 hours per week in 2030. Though this prediction will likely be proven wrong, this does not seem to be due to insufficient economic progress over the last century. Instead, we argue that there are two reasons behind the likely failure of Keynes' prediction, and that our current working time is not socially optimal. The first reason is the importance of relative income or comparison for subjective well-being, as measured in surveys of subjective well-being (SWB), happiness or life satisfaction. This goes back to Veblen (1899) who criticized wasteful consumption of positional goods. His theory helps to explain the 'Easterlin Paradox', or the fact that average happiness has not increased with economic (or per capita GDP) growth over the last half century in richer countries, while at any given point in time, richer individuals are happier, holding constant other (actually more important) influences like health, social relationships, and work (Easterlin, 1974, 1995, 2010, 2021; Rojas, 2019; FitzRoy et al, 2014).

Due to relative income comparison, most people work more than is socially optimal in order to match their reference groups, neighbours, colleagues, friends etc., or “keep up with the Jones”. As everyone engages in this game, relative positions remain largely unchanged, yet everyone suffers from overworking, a prisoner’s dilemma, or sub-optimal Nash equilibrium. This arises because each person’s income imposes a negative externality on all other individuals. To cope with this social inefficiency, Ljungqvist and Uhlig (2000) suggest a consumption tax equal to the negative externality. Corneo (2002) shows that introducing progressive income taxes can be a Pareto improvement. Dupor and Liu (2003) confirm the desirability of this tax policy to counter the effect of consumption comparison, while leisure is not a positional good, subject to comparison. Similarly, Guo (2005) recommends a labour tax, and Mujcic and Frijters (2015) show that the optimal tax should increase with conspicuous consumption. Moreover, FitzRoy and Nolan (2016) find that higher income tax can discourage overwork induced by income comparison and raise the wellbeing of a poor majority who suffer most from “keeping up with Jones”. Some studies find that shorter working hours can raise employment significantly with limited loss to employers (FitzRoy et al 2002), but these policy recommendations are based on the current regime of fixed standard working hours for most full-time jobs.

The second reason for current long working hours is lack of flexibility in the labour market, which is often ignored in the existing literature. We consider this to be a major oversight because working time is not generally flexible for individuals and even under collective bargaining, working hours are only infrequently renegotiated. About 3 million British workers typically want more than their current, usually part time hours, or are ‘underemployed’, and a similar number, about 10% of the working population, want shorter hours even with less pay, or are ‘overemployed (ONS). If wages rise with productivity, many workers will demand more leisure, but wages for most have stagnated in the US and UK, which helps to explain the lack of change in standard hours. The largest scale trials with shorter hours, recently in Iceland have been described as an ‘overwhelming success’ (Autonomy, 2021).

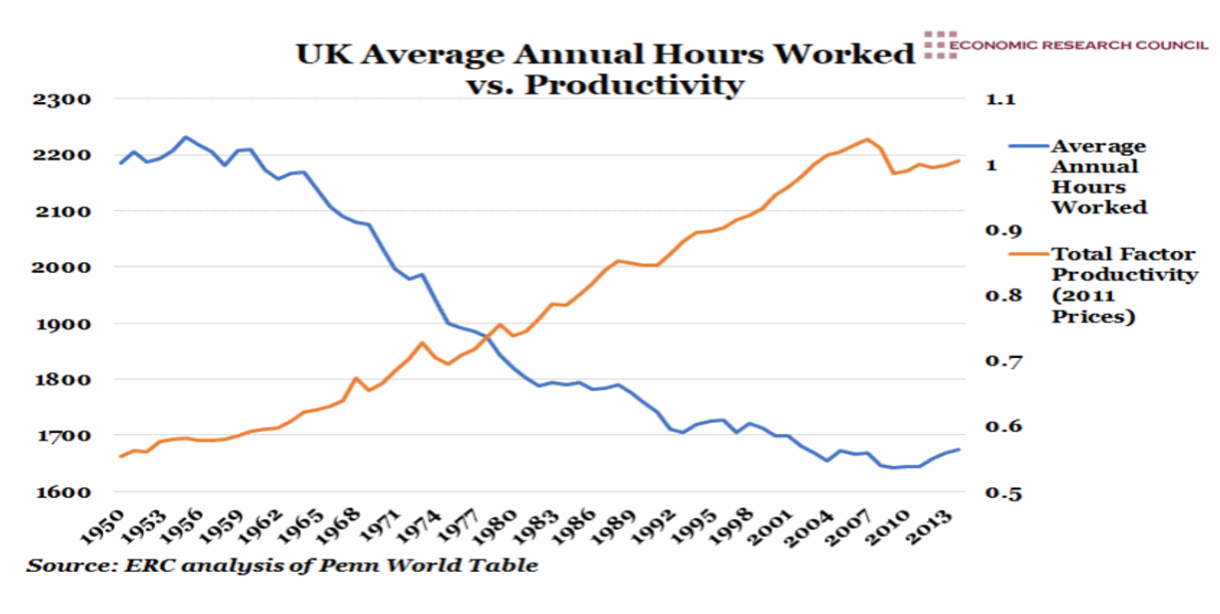
The campaign for shorter working hours responds to broad evidence of overwork and its social costs, as well as evidence for the benefits of more leisure even at the expense of reduced income, and also to the new challenge presented by artificial intelligence and automation (Anderson, 2017; Chomsky and Waterstone, 2021; McCallum, 2020; Susskind, 2020; Benanev, 2020). There is no evidence for the standard view of working time as the result of rational choices by employees and employers with the Pareto efficient outcome predicted by unrealistic competitive market efficiency theory. Realistically, of course, labour markets are ‘sticky’, and employers always have some market power and a preference for longer hours rather than increasing employment, reflected in the prevalence of unpaid overtime and opposition to reducing hours with a four-day week (Banerjee and Dufflo, 2019; Barnes, 2020; Benanev, 2020; Coote et al, 2021; Grosse, 2018; Spencer, 2019).

We have been stuck with the 5-day week so long not because of its social optimality, but at least partly because of competitive pressure and income comparison, or the perceived need, enhanced by social media, for “keeping up with the Jones”. More fundamentally, if artificial intelligence and automation substantially raise labour productivity and/or replace many existing, routine jobs, as is expected by many observers (Bananeva, 2020; Susskind, 2020), then the demand for more leisure and the other economic benefits of ‘job sharing’ with a four- day week is likely to increase as well (Messenger, 2018).

3. *More Free Time*

Earnings and productivity in some jobs might decline to some degree with a four-day week, while increasing in others, and depending on working hours, decisions on which should be made by employees as part of their right to flexibility, and more generally as a component of workplace democracy, to ensure that an appropriate trade-off between leisure time and productivity is realised. Currently and shockingly, half the requests for flexibility by working mothers in the UK are rejected (Topping, 2021). Historically, hourly productivity and wages have generally risen with declining hours. Figure 2 below shows the British experience after WWII.

Figure 2: Productivity and working hours in UK[4]



Recently many individual experiments with shorter hours in the form of four-day weeks have shown little or no decline in productivity, and substantial increases in worker satisfaction with less commuting, which is one of the least-liked and most stressful activities in the average

[4] https://ercouncil.org/2019/chart-of-the-week-week-8-2019/.

working day. There is thus growing support for the general introduction of a four-day week, which could also play a part in the response to rapid progress in AI and automation[5].

The UK has the second highest rate of part-time employment in the OECD, at over 20%, most of which is unskilled, low paid, and female. In contrast the Netherlands has the highest, about 37% part-time employment with the highest proportion of highly skilled part-timers (with tertiary education), and average hours for both full-time and part-time workers are among the shortest. Only Norway and Denmark have slightly shorter average full-time hours. And 'over 25% of workers in highly skilled managerial, professional and technical occupations also work part-time – well over twice the OECD average for people in these roles.' (OECD, 2019).

As the OECD summarises, 'While the Netherlands has made important strides in ensuring that part-time work is of good quality, relative to other OECD countries, it still needs to tackle a major challenge in its part-time workforce: that part-time jobs are disproportionately held by women, with negative consequences for gender equality in the labour force and at home'. However, it is also the case that for many women with children or other care responsibilities at home, part-time work outside the home is the only alternative to complete withdrawal from the labour market. According to the 'Better Life Index', the Netherlands ranks top in work-life balance, likely due to the wide range of available working times, and in the top five of happiness or subjective well-being rankings, together with the Nordics and Switzerland, and well above the UK and US. The latter countries have higher per capita GDP mainly due to their longer working hours, but much lower happiness rankings, together with the weakest labour unions, least regulated labour markets, worst work-life balance and highest adult and

[5] Barnes, 2020; Benanev, 2020; Coote et al, 2021; Susskind, 2020; Kallis et al, 2013; Kallis et al 2020; Spencer, 2019; 2015

child poverty rates under neoliberal government for the last four decades (Dorling and Koljonen, 2020; Martela et al, 2020; Wilkinson and Pickett, 2018).

The rapid expansion of homeworking in response to the Covid-19 pandemic, from around 5% to nearly half of all employees has brought many benefits, but also additional stress for some as employers can more easily demand additional unpaid overtime when working time is not directly verifiable, and the home environment may not always be conducive to work. Mothers of young children face particular problems (Dunatchik et al, 2021). For most office or 'white collar' employees the future pattern seems likely to involve a hybrid mix of home and office working, reducing commuting without losing all the opportunities for productive and social interaction at the workplace (BBC, 2021; Microsoft, 2021). The refusal of most employers to allow any home working prior to the pandemic is yet another example of abuse of power by 'tyrannical private government' (Chomsky and Waterstone, 2021; Anderson, 2017), and the right to work at home, full or part time, and whenever requested and feasible needs to be enshrined in post-pandemic legislation to 'build back better' with more workplace democracy and less 'tyrannical private government' (FitzRoy and Spencer, 2020).

4. *Market equilibrium or rigidity?*

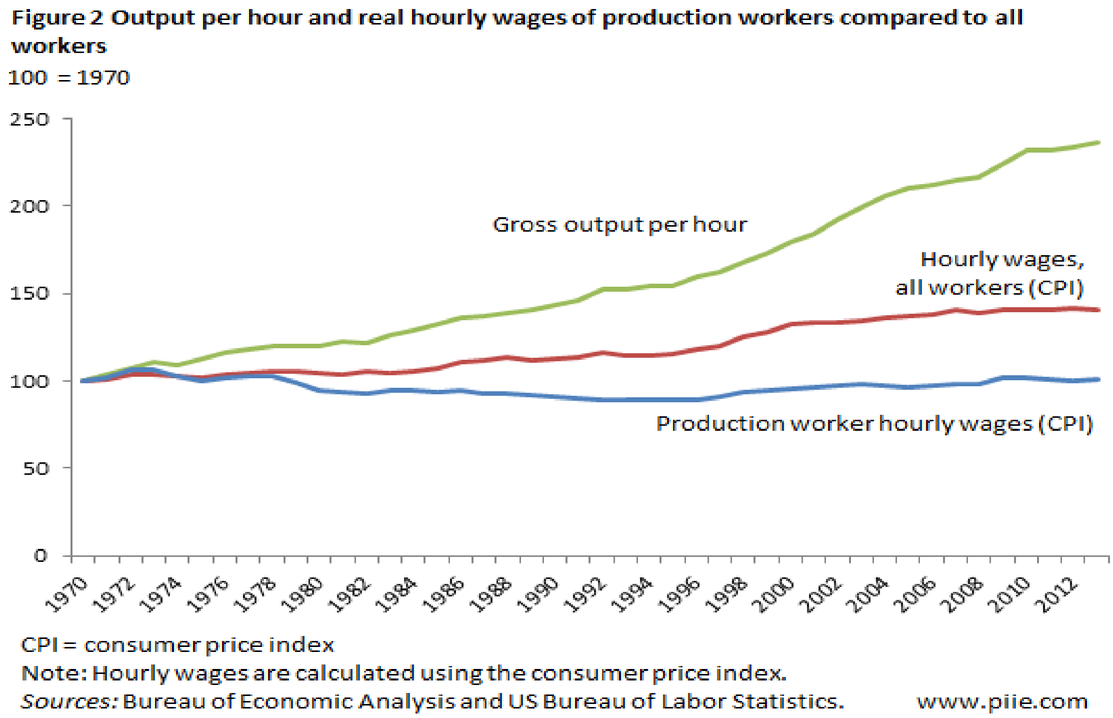
Two common components of conventional wisdom are: (i) competitive markets are Pareto efficient and (ii) average working times are determined by existing, competitive markets. Even if the first were correct, the second may still be wrong. Besides market power abuse by employers as mentioned earlier, current working time may not be consistent with free choices on both sides of the labour market. Economic theory does not explain how typical working time evolves with an economy. It is generally recognized that real wages affect labour supply in two opposite directions. As real wages rise, the income effect tends to reduce labour supply since leisure is a normal good for which demand rises with income. On the other hand, the substitution effect tends to increase labour supply as leisure becomes more expensive, measured by forgone income. The net effect is indeterminate and depends on individual preferences and the level of income. It is thus not clear from basic economic theory how working times change as an economy grows.

Moreover, in general equilibrium, real wages are not exogenous. Higher wages raise production costs and may reduce labour demand unless greater consumption demand by better paid workers is sufficient to outweigh the direct effect of higher wages. If total output falls in recession, real wages may be sticky and slow to respond because individual employers are reluctant to cut wages and risk losing their best workers, or because of collective bargaining agreements. Aggregate working hours decline when some workers, usually those with least seniority, are made redundant, or under work sharing, when hours are reduced for most employees.

Real wages in general equilibrium must match labour demand with labour supply. There is no one sided causality from wage to working time in the first place. The equilibrium labour supply, real wages and labour demand are all determined simultaneously. In this process, the technology or production function plays an important role. Capital growth is part of economic growth, usually combined with technological improvement, which may decrease the demand for labour, as AI and automation are likely to do in the future. A question is: how the equilibrium working time in a competitive or 'free' market should have evolved with recent economic development.

A common feature of recent economic evolution across most developed countries is a gradual reduction of labour's income share relative to that of capital. This seems to be the result of labour-saving technological progress, such as computers and IT, as well as growing employer market power (Eackhout, 2021; Stoller, 2019). It implies a general decline in the marginal productivity of many kinds of labour, despite a continuous increase in the amount of capital. This is manifested by stagnating or even declining real wages for most workers, which implies a weaker substitution effect. Meanwhile, as per capita GDP continues to rise, the income effect may become dominant, and the net effect may be more favourable to shorter working time and more leisure. Figures 3 – 6 below present evidence of these trends.

Figure 3: Productivity and wages in US[6]



[6] https://www.piie.com/blogs/realtime-economic-issues-watch/growing-gap-between-real-wages-and-labor-productivity.

Figure 4: Productivity and wages in OECD[7]

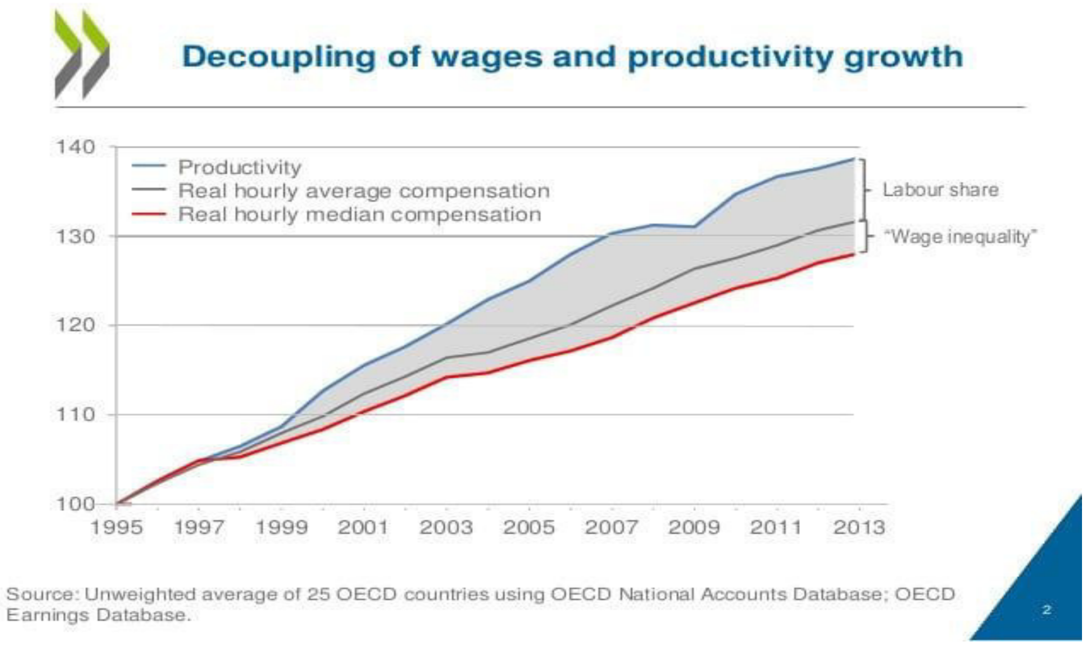


Figure 5: US Labour Share[8]

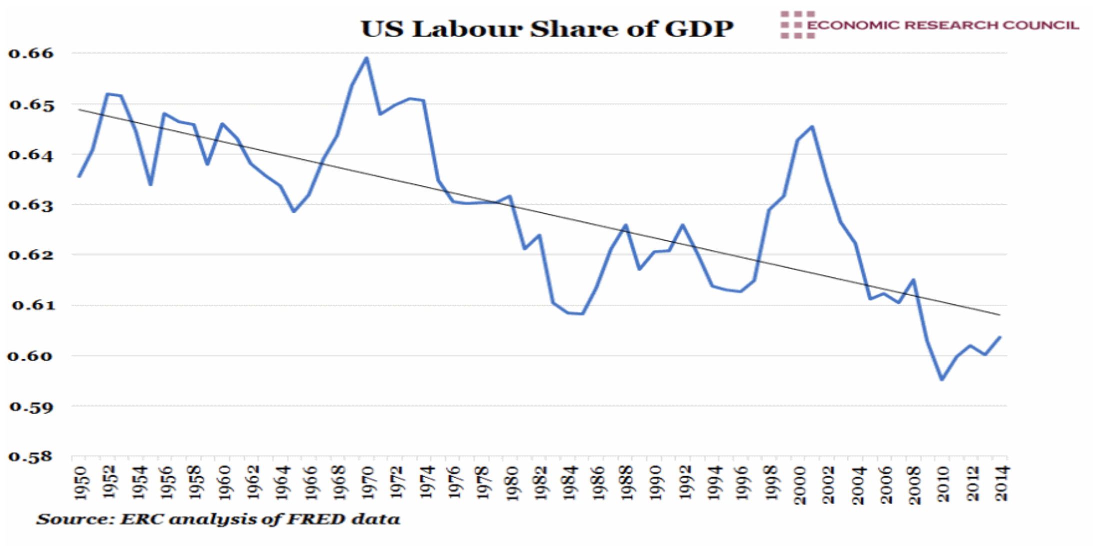
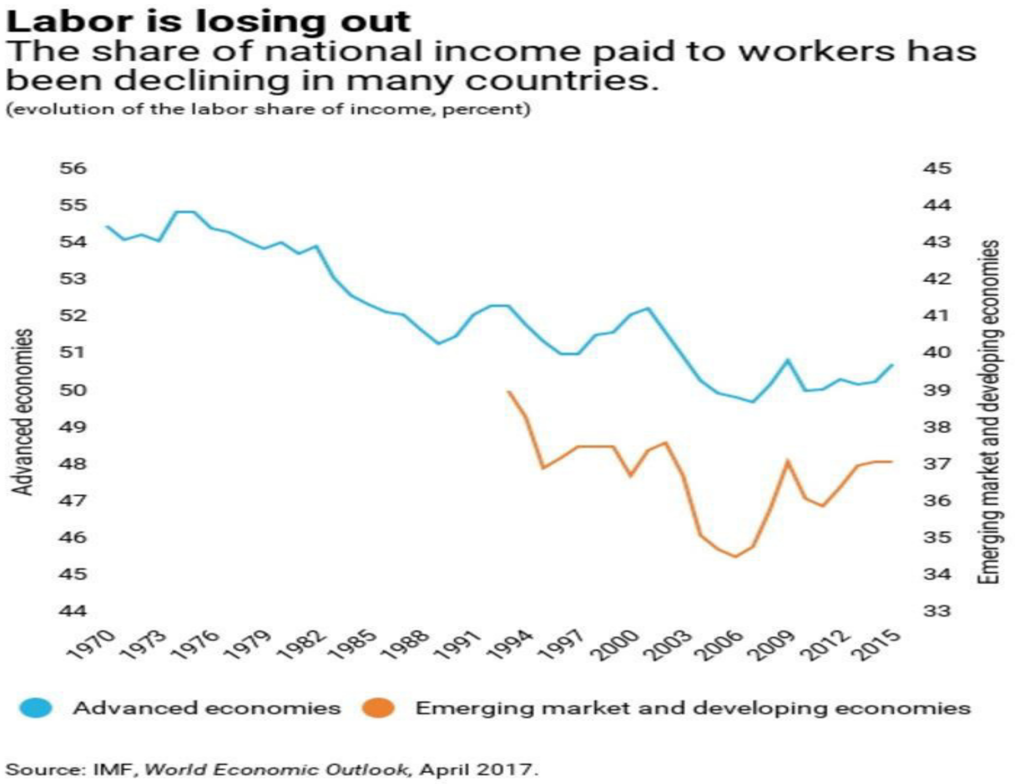


Figure 6: Labour Share Worldwide[9]

[7] https://www.slideshare.net/Structuralpolicyanalysis/divergence-in-productivity-and-implications-for-inclusion.
[8] https://ercouncil.org/2019/chart-of-the-week-week-7-2019/.
[9] https://www.bruegel.org/2017/04/the-decline-of-the-labour-share-of-income/



The previous graphs demonstrate two recent common phenomena in advanced economics. One is a significant divergence between productivity and the real wage, and the other is a falling share of labour income in the total output. These two common phenomena are closely related and have a clear implication regarding the equilibrium working time determined by a free market, as can be shown by a simple general equilibrium model.

Next, we use such a model to show that changing technology should lead to shorter working time in a free market. The economy consists of n consumer-workers, with Cobb-Douglas utility functions:

$$U_i = c_i^a \left(T_i - h_i\right)^{1-a}, \qquad 0 < \alpha < 1 \tag{1}$$

Here $c_i = wh_i + y_i$ is consumption, w is the wage, y_i is capital income, T_i is the total time available, h_i is working time, and $T_i - h_i$ is leisure for individual i. Parameter α indicates relative preference for consumption over leisure. Every individual, i, chooses optimal working time h_i to maximize utility in (1). The economy has a Cobb-Douglas production function with constant returns to scale and two input factors, labour *L* and capital *K*:

$$Y = AL^{\beta}K^{1-\beta}, \qquad 0 < \beta < 1. \tag{2}$$

A is a productivity factor determined by technology and natural resources. As capital *K* and productivity *A* increase, output per capita certainly rises. Nonetheless we will show that this has no direct impact on the equilibrium labour supply. Parameter β indicates the relative importance of labour compared to capital. A higher value of β implies a higher marginal productivity of labour. Thus labour-saving technical progress should reduce its value. In general equilibrium we can show that this value will be equal to the labour share of total income. We model the economy as a single price-taking firm with constant returns to scale for simplicity, but equivalent to many such firms. Given wage *w*, interest rate *r* and output price *p*, the 'competitive' firm(s) choose *L*, and *K* to maximize its profit:

$$\pi = pAL^{\beta}K^{1-\beta} - wL - rK \tag{3}$$

The homogeneous labour input is given by $L = \sum_{i=1}^{n} h_i$ where h_i is the number of hours supplied by worker *i*, and *n* is the number of workers. We assume full employment in this free market. We find that in equilibrium the labour income share, i.e., the ratio of *wL* to *wL* + *rK* must be equal to β. We let *L*/*n* be the average working time resulting from differing choices by individuals. We find the ratio of *L*/*n* to the available time *T* in the equilibrium (see Appendix for the derivation).

$$\frac{L}{\sum T_i} = \frac{\alpha\beta}{1-\alpha+\alpha\beta} \tag{4}$$

It means that the equilibrium working time ratio is independent of total capital *K* and constant *A*. It will remain constant if a society become richer due to more capital or any technological progress which does not affect the relative importance of labour and capital. If people's preferences remain constant, it only depends on β, which indicates the relative importance of labour compared to capital. A lower β implies a lower working time ratio. For example, assume $\alpha = 0.5$, when $\beta = 0.75$, the ratio is 3/7; when $\beta = 0.5$, the ratio falls to 1/3.

We can show (see Appendix) that in equilibrium, the share of labour income in GDP must be equal to β, per capita output or GDP per capita, Y/n, productivity per hour, Y/L, and the real wage, w/p all increase with A and capital per capita, K/n. If β remains constant, the share of labour should be constant and real wage should increase with the same rate as productivity, since $w/p = \beta Y/L$.

As shown earlier in Figures 3 - 6, we observe a gradual decline of the labour share of total income in most countries, and a significant and increasing gap between productivity and real wages, which implies a falling β. If β indeed falls, our equation (4) implies a shorter working time in this free market economy. This is independent of the growth of A and K. Our simple model shows that the equilibrium working time should be reduced when technology reduces the marginal productivity of labour if there is no market rigidity. Hence constant working time is not consistent with free markets, but an inefficient equilibrium due to inflexible conventions, which can probably only be overturned in the short run by direct government intervention.

5. *Sustainability and Affordability*

The other important reason for reducing work time is that current levels of consumption and material resource use by rich individuals and countries are unsustainable (Hickel, 2020; Kallis et al, 2020; Jackson, 2021). The idea that 'green growth' in a zero-carbon economy could continue neglects the environmental impact of large-scale material use and consumption, while complete recycling is precluded by the 2nd law of thermodynamics (Jackson, 2021). For those individuals and families who are not in poverty, leisure can be a substitute for 'positional' and material consumption (growth) which has much less impact on the environment, allowing for 'prosperity without growth' (Jackson, 2017). The scourge of growing inequality and persistent poverty even in rich countries can only be directly reversed with redistributive tax and other policies, and cannot be ameliorated by the mirage of unsustainable, 'permanent' growth (FitzRoy and Jin, 2021; FitzRoy and Spencer, 2020).

On the other hand, knowledge will no doubt continue to grow if a climate catastrophe can be avoided, and technical progress and increasing productivity enable reduced working hours, with increased leisure instead of more material consumption, to realise the sustainable, or 'steady state economy' long championed by pioneering environmental economist Daly (1973, 2005), or the recent 'doughnut economy' version described by Raworth (2017), or Jackson's (2021) 'post growth' economy.

An important obstacle to reduction of work time is that the low hourly wages earned by many workers require long hours for survival. The new, 2021, living wage of £8.91 per hour would provide a weekly wage of £329 for a 37-hour week, which is 56% of median weekly earnings of £585 (ONS), and so close to the international relative poverty level defined as 50% of median income. However, many workers are paid far less than the living wage, which in any case has not kept pace with the dramatic rise in rental and housing costs in London and the south- east in recent years.

As mentioned earlier, several studies suggest an additional income tax to counter the negative externality of overwork. Instead of only relying on tax policy, we argue that a combination of a tax reform and a universal basic income (UBI) can resolve the problems of excessive working and income inequality simultaneously. A surprising omission in most of the discussion of working time reduction is the supportive role of a UBI, which would generally encourage reduced labour supply and shorter hours by the income effect and ensure that incomes of low earners at least will not decline after adopting a four-day week (The Green Institute, 2016). More progressive taxation, such as abolishing the personal allowance of currently £12, 570, could claw back the UBI or part thereof from higher earners, and greatly reduce the net cost. Such tax policy can be justified by curbing excessive work due to relative income comparison according to work cited above.

A 7.5-hour work- day is paid about £67 at the new 2021 national living wage of £8.91 per hour. In the extreme and very unlikely case that there are no compensating productivity gains, losing one day of work per week for 46 weeks would reduce annual earnings by about £3,000, so even a modest UBI or minimum income as proposed by FitzRoy and Jin (2018), Lansley and Reed (2019), Widerquist and Arndt (2020), and others could leave low earners better off.

To finance a UBI and a four-day week, a natural first step would be to abolish the regressive personal income tax allowance (PA) and the allowance for national insurance contributions (NICs), currently £12,570 per year, and £9,568 per year respectively, which mainly benefit higher earners and cost about £238 billion (Baker and Murphy, 2020). However, this would add around £4,000 to the tax and NICs bill for those earning at about the PA level or more, so a UBI of around £8,000 per adult would then be needed to compensate for all of the tax rise for the lowest earners. This is approximately the poverty level for a single adult, so such a UBI could replace almost all existing welfare or social security expenditure of over £200 billion, while essentially abolishing poverty, and the net cost would only be about half the gross cost, or just over £200 billion, which could be funded by abolishing the PA and NICs allowances. Most of the numerous existing tax reliefs and allowances, costing a total of £425 billion, are indeed regressive, mainly subsidising savings by high earners, and hence should be phased out in the long run.

As wealth inequality has increased even faster than income inequality in the UK and US, leading tax economists have proposed a wealth tax (Advani et al, 2020; Saez and Zucman, 2019). Aggregate UK pre-Corvid wealth was nearly £15 trillion, which is around seven times GDP, a larger ratio than in the US, and the top 10 % hold about half of total wealth, so a 2% average, progressive wealth tax could yield about £300 billion (and replace regressive council tax), though evasion and avoidance, particularly by the wealthy who make the most use of offshore tax havens, would reduce this potential tax revenue unless the government reversed current policy of implicitly supporting tax havens and reducing the funding of HMRC (Murphy, 2021). The additional revenue is urgently needed since total tax revenue in the UK is only about a third of GDP, compared to around 45% in France and the Nordics, which have shorter working hours, more effective welfare and less inequality and poverty.

A universal basic income (UBI) is likely to be more effective in raising low incomes than attempting to enforce a substantially higher minimum wage with the risk of negative employment effects, and which obviously does not benefit the non-employed. While sometimes seen as a disadvantage, the income effect of a UBI would certainly encourage shorter hours, both for the self-employed and for those in regular employment, to the particular benefit those with home caring responsibilities. The common objection to 'wasting' UBI on higher earners who do not need it overlooks the fact that a modest UBI could be clawed back from the better off by tax reform as discussed earlier (Baker and Murphy, 2020; FitzRoy and Jin, 2018). A UBI could also replace many existing means tested benefits, which actually impose high marginal tax rates on recipients as benefits are withdrawn when earnings rise, so the net cost would be much less than the gross cost.

The increasing prevalence of non-standard and precarious employment and self-employment with uncertain hours and earnings is another compelling argument for UBI (Standing, 2020), as well as for the reduction of standard hours with a four-day week to share the available work and encourage higher levels of regular employment. Much needed, large scale public expenditure for rapid transition to a zero-carbon economy in a green new deal (GND) would of course create jobs – and even approach full employment (FitzRoy, 2019; Rivkin, 2019), but reduced working hours would help to share the work and accelerate the move towards 'full employment'. No doubt some specialist skilled workers would be needed to work overtime at least temporarily, until additional training caught up. A job guarantee, as proposed by the Scottish Labour Party, should also be offered throughout the UK for the minority who remain workless (LabourList, 2021; FitzRoy and Jin, 2018). In contrast to authors such as Standing (2020), who identify a job guarantee with coercive 'workfare', the complementary benefits of a job guarantee combined with a UBI were developed by FitzRoy and Jin (2018), while Tcherneva (2018), Layard (2020), and the TUC (2020) propose a job guarantee on its own as the main welfare policy.

6. Conclusions

While there seems to be an overwhelming case for a four-day working week, it is also important to emphasise that needs and preferences for worktime vary much more than just between five days and four days, or between full time and 'part-time' work as usually defined. As in the Netherlands, flexibility should be a basic right, and all employees should be entitled to have their request for any particular hours of work seriously considered by the employer, with a detailed response and reasons in case of rejection. Accommodating a range of individual working hours in a large organisation obviously requires some additional managerial effort and time, but the welfare, motivational and productivity benefits are likely to far outweigh the costs. The full benefits are indeed only likely to emerge after a new generation, whose parents had more time for them than their parents did, has come of age (Boushey, 2016). Increased flexibility is also almost certainly going to be needed to respond to the expected progress of automation and AI, which will probably have far-reaching effects on work and the labour market (Suzman, 2020), though precisely what those effects are going to be is not yet entirely clear. In any case it is high time to reverse the ‘long-hours culture’ in the UK and US with all the associated benefits of worktime reduction, most practically in the form of a four-day working week as the new norm, combined with flexibility whenever requested and feasible.

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Appendix:

The first-order conditions for profit maximization for L and K are:

$$\beta pA(K/L)^{1-\beta} = w \qquad \text{and} \qquad (1-\beta)pA(L/K)^{\beta} = r \qquad \text{(A1)}$$

Dividing the two equations in (A1) by each other, we get the optimal capital/labour ratio:

$$\frac{K}{L} = \frac{1-\beta}{\beta}\frac{w}{r} \qquad \text{(A2)}$$

(A2) implies $rK = (1-\beta)wL/\beta$, so $rK + wL = wL/\beta$, or $wL = \beta(rK + wL)$.

As (A1) implies $A(L/K)^{\beta} = r/(1-\beta)p$, the output can be written as $f(L,K) = rK/(1-\beta)p$.

Profits are distributed according to capital ownership. With $\theta_i \geq 0$, consumer i's budget constraint is $c_i p = wh_i + \theta_i rK$, so $h_i = \frac{pc_i - \theta_i rK}{w}$. Hence, he chooses c_i to maximize his utility:

$$u_i = c_i^{\alpha}[T_i - \frac{pc_i - \theta_i rK}{w}]^{1-\alpha} \qquad \text{(A3)}$$

Here T_i is available time for consumer i. The first-order condition for utility maximization is $\alpha(w\,T_i + \theta_i rK - c_i p) = (1-\alpha)c_i p$, which implies optimal consumption as: $c_i = \alpha(w\,T_i + \theta_i rK)/p$. We sum it up for all consumers to get total consumption. With $\sum_{i=1}^{n}\theta_i = 1$, we get $\alpha(wT + rK)/p$, which must be equal to total output $rK/(1-\beta)p$ in equilibrium, and where the average available time is $T = \frac{1}{n}\sum_{1}^{n}T_i$. Hence, we have $\alpha(wnT + rK) = \frac{rK}{(1-\beta)}$.

Substituting K from (A2) into this, we solve the average equilibrium working time:

$$\frac{L}{n} = \frac{\alpha\beta T}{1-\alpha+\alpha\beta} \qquad \text{(A4)}$$

Substitute L into the production function and divide it by n, we obtain per capita output: $Y/n = A(\frac{\alpha\beta T}{1-\alpha+\alpha\beta})^{\beta}(\frac{K}{n})^{1-\beta}$. Dividing the output by L, we get the productivity per hour worked $Y/L = A(\frac{1-\alpha+\alpha\beta\alpha\beta T}{\alpha\beta T})^{1-\beta}(\frac{K}{n})^{1-\beta}$. Finally, substitute L into (A1), we solve the real wage $w/p = \beta A(\frac{1-\alpha+\alpha\beta\alpha\beta T}{\alpha\beta T})^{1-\beta}(\frac{K}{n})^{1-\beta} = \beta Y/L$. They all increase with A and K/n.