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MHRL Briefing Paper

Bad Timing: Are workers
more productive on certain
days of the week?

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THE LONDON SCHOOL
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POLITICAL SCIENCE ■

MANPOWER HUMAN RESOURCES LAB, CEP

As one of the world's foremost employment agencies, Manpower is seeking to contribute to the analysis of and policy debate around the issues of the changing world of work. In May 2006 it therefore established with the Centre for Economic Performance the Manpower Human Resources Lab at the London School of Economics. The aim of the Lab is to become a leading centre studying the impact of human resource decisions and labour market trends on productivity at firm, national and global levels.

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Bad Timing:

Are workers more productive on certain days of the week?

Research evidence suggests that labour productivity – output per hour worked – can vary over the course of the week. Employers could therefore benefit by reorganising working time – perhaps by concentrating employees' hours in the middle of the week or introducing greater flexibility in work schedules.

Key findings

- The distribution of working time across the days of the week indicates when there is the biggest input of labour to productive activity.
- The traditional working days of Monday to Friday each account for around one sixth of the aggregate supply of working time across a typical week. Tuesday accounts for the largest share of working time (18.8%) and Friday the lowest (16.8%).
- The pattern of working time varies considerably by industry sector: for example, weekends account for a relatively large share of total working time in sectors such as 'hotels and restaurants' and 'retail'.
- While there is scant direct evidence on productivity variation by day of the week, it does seem likely that daily output tends to reach a peak in midweek and tails off towards the weekend.
- There is also indirect evidence of variations in productivity by days of the week in productivity-related outcomes like worker absence patterns, injuries and accidents at work and reported job satisfaction.
- There is a need for more and better data on 'day effects'. But if productivity does indeed rise and then gradually decline over the working week, employers might

reorganise their employees' working time so as to have a greater concentration of hours in the middle of the week.

- Employers might also offer even greater flexibility than is currently on offer in the scheduling of working time.
- There could also be a reconsideration of the timing of bank holidays, perhaps shifting the non-religious ones from Mondays to Fridays.
- But there are a number of important constraints on reorganising the timing of work, including more people having to work 'unsocial hours' and the need to synchronise work schedules, especially in customer-facing service sectors.
- Furthermore, workers are not randomly allocated to patterns of working time: they choose them or have them chosen by their employers for reasons that may also affect productivity. Such 'selection effects' mean that productivity will not necessarily be improved by reorganising the timing of work.

The research

'Are There Day of the Week Productivity Effects?' by Alex Bryson (Policy Studies Institute) and John Forth (National Institute of Economic and Social Research) is published as Discussion Paper No. 4 from the Manpower Human Resources Lab at the Centre for Economic Performance, London School of Economics. The study is available online here: <http://www.lse.ac.uk/collections/manpower/publications/MHRLdp004/MHRLdp0004.pdf>.

Background

There is widespread anecdotal evidence about ‘how hard workers work’ on different days of the week. Such ‘day effects’ are usually thought of as nothing more than a curiosity: after all, it might be said, you can’t go about changing the days of the week.

In fact, there are good reasons for investigating this issue more thoroughly. First, it is important to establish if workers really do work harder and therefore are more productive on certain days of the week – and if so, what causes such variations. Substantial day-specific differences in labour productivity – output per hour worked – may well have implications for a country’s wealth creation and for firms’ business success.

Second, it may be practical to change working patterns to effect improvements in productivity. For example, workers might be persuaded or even required to redistribute their working time towards periods when they are likely to be most productive. There are a variety of ways in which this might be achieved: from direct interventions such as moving away from a ‘weekend’ towards rest days more evenly spread across the week and altering the days on which bank holidays fall, through to changes that might have an indirect effect on working patterns such as revised schedules for school terms.

Working time across the seven days of the week

It is very difficult to measure the effort that workers put into their jobs. But it is possible to measure their working time, and this provides some indication of the days of the week on which there is the biggest input of labour to productive activity.

For example, diary-based data in which people record how they use their time show that roughly three-quarters of all those in employment in the UK (including the self-employed) engage in some paid work on an average weekday. Just under one in three of those in employment engage in some paid work on an average Saturday and just under one in four do so on an average Sunday. Data from the Labour Force Survey indicate that nearly two-

thirds (63%) of those in employment work a five-day week, with a further 12% working six days and 7% working four days.

The time use data also show that the average number of minutes worked per person is around 360 minutes (six hours) on Tuesdays, Wednesdays and Thursdays, 342 minutes on Mondays and 317 minutes on Fridays. This implies that people work the longest days, on average, in the middle of the week.

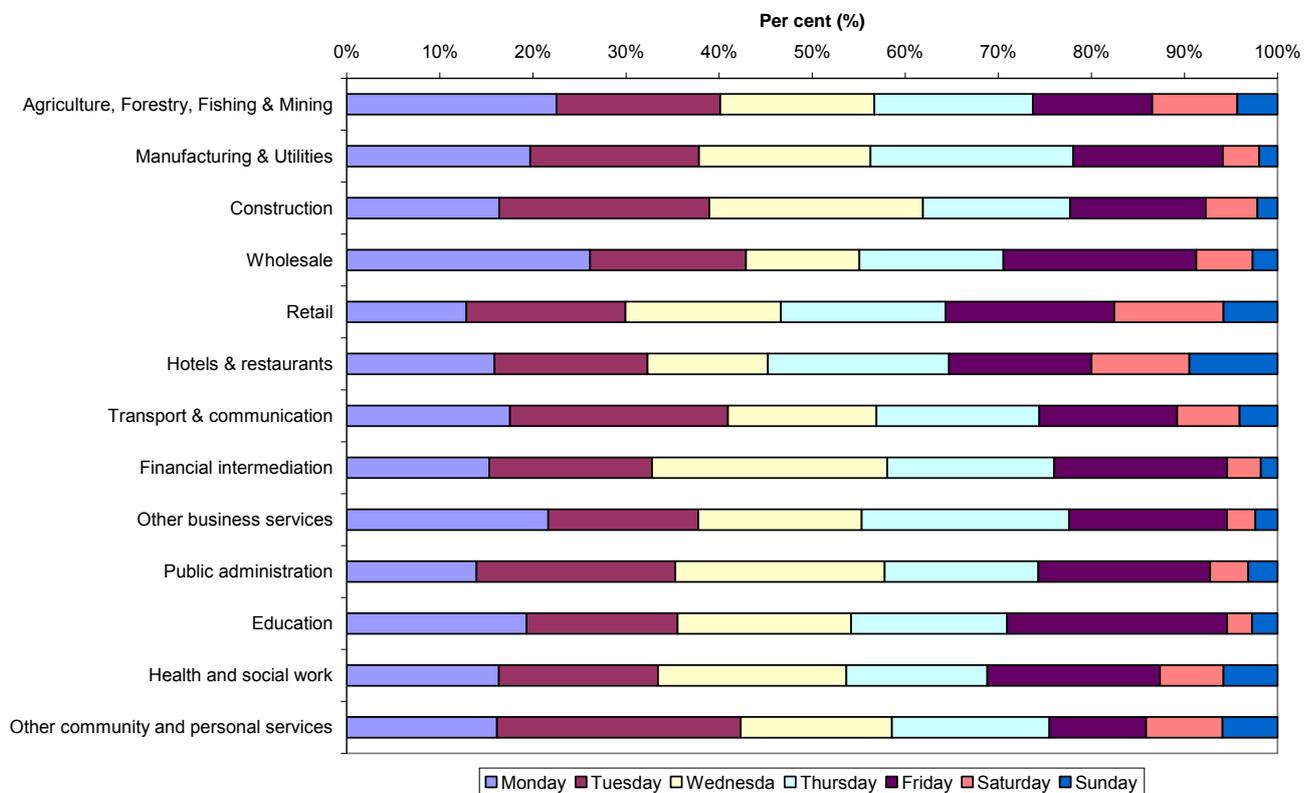
The average number of minutes worked per person falls to 116 minutes on a Saturday and just 71 minutes on a Sunday. These figures naturally include a large number of zeros from those who do no work at weekends: the Labour Force Survey data indicate that 45% of men and 27% of women never work at weekends.

The average working time on Saturdays and Sundays also reflect a greater incidence of part-time work at weekends compared with Monday to Friday. Among those working on a particular day, the proportion who work six or more hours falls from around 80% on weekdays to around 50% on Saturdays and Sundays.

Combining the incidence of work with the average amount of work provided on any one day shows the distribution of working time across the seven days of the week. The traditional working days of Monday to Friday each account for around one sixth of the working time supplied in aggregate across a typical week. Among these five days, Tuesday accounts for the largest share of working time (18.8%) and Friday the lowest (16.8%). The share of working time that is supplied on Saturdays is considerably lower (5.9%) while Sundays account for the lowest share of all (just 3.8%).

As the Figure shows, this pattern varies considerably by industry sector. Weekends account for a relatively large share of total working time in sectors such as 'hotels and restaurants' (20%) and 'retail' (18%), but a relatively small share in sectors such as 'financial intermediation', 'other business services' and 'education' (each 5%).

The distribution of working time in the UK across days of the week, by industry sector



Source: Authors' calculations from the UK Time Use Survey 2000

Explaining the pattern of working time

What explains the pattern of paid work across the working week? The Christian religion naturally accounts for the tradition of Sunday as a rest day in the UK and Europe more generally. In Islam, the day of public worship is Friday and so the working week tends to run from either Saturday to Wednesday or Sunday to Thursday. In Judaism, the day of public worship is Saturday and so the working week in Israel also tends to run from Sunday to Thursday.

The tradition of a five-day working week has its origins more in industrial history. The early industrial period in Europe tended to involve a six-day working week. But trade union campaigns led to a reduction in the working week and Saturday commonly became a day of rest alongside Sunday. Another impetus came from employers like Henry Ford who introduced a shorter working week in his car factories in combination with higher pay. Ford argued that a shorter week was no less productive, as workers came back to work fresher after two days off. He also believed that an increase in leisure time was necessary to drive an increase in the demand for consumer goods.

Nowadays, the focus is increasingly on departures from the Monday to Friday 9-to-5 model of working, with talk of the '24/7 society' giving the impression of a greater spread of working time into weekends, evenings and nights. The data certainly indicate that Sunday working increased in the UK over the 1990s, as did evening work and shift work.

A number of factors lie behind such trends. One is increasing competitive pressures, which encourage employers to maximise use of capital equipment and to seek new market opportunities by serving customers over a wider portion of the day. A second factor is increasing consumer demand for out-of-hours services, seen most prominently in the retail sector. And a third factor is greater female participation in the labour force and, associated with it, a greater level of employee demand for flexible working hours, which has in turn been supported by government policy to encourage employers to offer such flexibility.

Blue Mondays and TGI Fridays

Why might productivity vary across the days of the week? The obvious answer is the sequencing of each of the seven days. With the most common pattern of work in the UK being a five-day working week beginning on a Monday and ending on a Friday, it is conceivable that productivity may decline over the course of the week as a result of increasing fatigue. The two-day weekend then provides the opportunity to rest before beginning the working week again the following Monday.

On the other hand, productivity may be depressed to some degree on Mondays by workers' need to reorient themselves after two days away from the work process. It is also conceivable that workers may lack motivation on a Monday as it is the point furthest from the next available day of rest or leisure – the 'Monday blues'. The proximity of Friday to the weekend may thus result in higher levels of motivation – particularly if there is a requirement or perceived advantage in completing tasks before the weekend.

It is unclear how these sequencing effects may balance out, but one possibility is that productivity may be at its peak in the middle of the working week, say on a Tuesday or Wednesday. While there is scant direct evidence on productivity variation by day of the week, it does seem likely that daily output tends to reach a peak in midweek and tails off towards the weekend.

There is also indirect evidence of variations in productivity by days of the week. Worker absence patterns, for example, are negatively related to productivity and thus can provide indications as to how productivity itself may vary: research suggests that absence tends to be higher on Mondays and lower at the end of the week. Similarly, studies in North America find an increased probability of injury and accident reports on Mondays compared with any other day.

Psychological well-being may also influence task performance so studies of temporal variance in job satisfaction and happiness may be informative about productivity. UK survey data indicate that reported job satisfaction is higher and stress levels lower among workers interviewed on Fridays and Saturdays than among those interviewed midweek.

The implications for business practice

If, as some of this research evidence suggests, productivity does rise during the early part of the week and then gradually declines towards a low point at the end of the week, there are implications for how employers might reorganise the working time of their employees:

- First, there could be a greater concentration of working hours in the middle of the week. Given that a substantial proportion of employees are not at work midweek and, among those who are, a substantial proportion work less than a full day, there would seem to be scope for such a redistribution of working time. At one extreme, it may mean curtailing the traditional working week to four days if the subsequent increase in output would more than offset the reduction in working time. A more likely scenario is to encourage further inequality in the distribution of hours across the traditional five days.
- Second, there could be even greater flexibility than is currently on offer in the scheduling of working time. While there may be certain times in the week that are most productive for the average worker, this optimal time point is certain to vary across individuals depending on their personal and job characteristics. Productivity gains may be achievable if both employers and employees are encouraged to take a more creative approach to work scheduling over the week and to engage in more active discussion about how work can be scheduled in ways that maximise output.
- Third, there could be a reconsideration of the timing of bank holidays. Three of the four non-religious bank holidays in England and Wales fall on a Monday but might reasonably be moved to a Friday if that were deemed to be the least productive day in the traditional working week. This would, of course, bring about only a negligible increase in national output across the year, but would to some small degree represent a more efficient allocation of labour.

Potential constraints on reorganising working time

It is important to note that even if output does vary over days of the week, productivity will not necessarily be improved by reorganising the timing of work. The reason for this caution is not simply the general lack of data on day effects. There is also the possibility of ‘selection effects’, which lead to differences across different types of worker working on different days. Workers are not randomly allocated to working time patterns: they choose them or have them chosen by their employers for reasons that may also affect productivity.

In addition, there are a number of significant constraints on reorganising the timing of work. First, it seems likely that, unless the total length of the working week is to be altered or the overall size of the labour force is to be expanded, any reorganisation of working time is likely to lead to an increasing proportion of working time falling in what are usually perceived as 'unsocial hours': early mornings, evenings and weekends.

To the extent that any reorganisation of work does entail a greater proportion of unsocial hours, any attendant productivity gains may also be accompanied by increased wage costs. Unsocial hours typically attract a wage premium as a means of compensating employees for the loss of opportunities for social interaction and the potential disruption of family life. Increased wage costs will, of course, offset the value of any productivity gains to some degree, and thus have the potential to reduce the extent of any economic benefits.

A further constraint arises from the need to synchronise work schedules. The time at which workers supply their labour matters, especially if demand for the product or service must be contemporaneous with labour supply, as with so many customer-facing services. Firms must continue to be able to synchronise the efforts of their workers with the requirements of supply chains and the demands of customers. Technological advances may make this easier in some circumstances, but the 'on-demand' nature of the 24/7 society may equally present significant constraints.

Clearly, the importance of such constraints will depend critically on the extent to which any reorganisation of work is adopted universally across families, social groups, work groups and supply chains. With the increasingly inter-connected nature of society along both national and international dimensions, it seems implausible to expect anything other than localised adjustments. The challenge of identifying the most productive patterns of work is therefore likely to be no greater than the challenge of effecting a more productive pattern of working.

The study

This study surveys research evidence from a variety of studies over many years and in a number of different countries. It also analyses the detailed information on the distribution of working time across the week that is provided by the UK Time Use Survey. This diary-based survey, which was conducted in 2000, asked a representative sample of individuals to record their activities in 10-minute time-slots across the course of two days. The sample was evenly distributed across the days of the week, enabling this information to be used to examine day-by-day variations in the extent to which people engage in paid work.

MHRL - PAST EVENTS

26 April 2007 LSE BOX, 5th Floor, Tower 3

MHRL Industry Forum: The Changing Labour Market

Prof David Autor, MIT Department of Economics, and Sir Tony Atkinson, Nuffield College, Oxford University

13 December 2006 CEP Conference Room, R405

MHRL Industry Forum: Organisational Flexibility

Prof Peter Cappelli, Wharton School, University of Pennsylvania

20 October 2006 LSE New Theatre

MHRL Lecture: Wind Tunnel for Business

Kay-Yut Chen, Hewlett Packard

03 October 2006 CEP Conference Room, R405

Seminar: Are Program Participants Good Evaluators?

Professor Alexander Whalley, University of California - Merced

12 September 2006 BOX, 5th floor Tower 3

MHRL Launch Event & Industry Forum:

Dr Anna Vignoles, Institute of Education

08 May 2006 LSE Old Theatre

MHRL Lecture: Love Your Job or Hate It? The Economics of Job Satisfaction

Prof Richard Freeman, Harvard, NBER & CEP

MHRL PUBLICATIONS

MHRLdp004

Are There Day of the Week Productivity Effects?

Alex Bryson (Manpower Research Fellow & PSI) and John Forth (NIESR)

July 2007

MHRLdp003

Temporary Agency Workers and Workplace Performance in the Private Sector

Alex Bryson (Manpower Research Fellow & PSI)

May 2007

MHRLdp002

Leeway for the Loyal: A Model of Employee Discretion

Francis Green (University of Kent)

April 2007

MHRLdp001

The Theory and Practice of Pay Setting

Alex Bryson (Manpower Research Fellow & PSI) and John Forth (NIESR)

December 2006

Special Report

Human Resources, the Labour Market and Economic Performance: A look back and a look forward from the Manpower Human Resources Lab at the Centre for Economic Performance

Romesh Vaitilingam

September 2006

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