

# Assessing the growth of remote working and its consequences for effort, well-being and work-life balance

Alan Felstead and Golo Henseke

*This article critically assesses the assumption that more and more work is being detached from place and that this is a 'win-win' for both employers and employees. Based on an analysis of official labour market data, it finds that only one-third of the increase in remote working can be explained by compositional factors such as movement to the knowledge economy, the growth in flexible employment and organisational responses to the changing demographic make-up of the employed labour force. This suggests that the detachment of work from place is a growing trend. This article also shows that while remote working is associated with higher organisational commitment, job satisfaction and job-related well-being, these benefits come at the cost of work intensification and a greater inability to switch off.*

**Keywords:** remote working, homeworking, teleworking, job quality, work effort, job-related well-being, job satisfaction, work-life balance.

## Introduction

The research objective of this article is two-fold. First, it assesses the scale with which work is being detached from traditional fixed places of work, such as the office, once other labour market changes are taken into account. Second, it examines the consequences working remotely has for work effort, job-related well-being and work-life balance. The importance of this article stems from the fact that both the 'revolution' and its positive effects for workers are often assumed rather than demonstrated. Recent newspaper headlines in Britain, for example proclaim that 'the office is dead!' (*Financial Times*, 30 July 2016), 'the rise of the home office helping workers escape to the country' (*Daily Mail*, 27 August 2016), and 'working from home booms as 4 million shun the commute' (*Daily Mail*, 5 June 2015). Nevertheless, more critical reflections have

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appeared in journals such as this one (Hislop and Axtell, 2007; Maruyama *et al.*, 2009; Sardeshmukh *et al.*, 2012; Wheatley, 2012; Vilhelmson and Thulin, 2016).

However, neither assumption has been robustly tested. The growth narrative, for example is based on trend data which do not take into account compositional changes to the economy highlighted by theories which focus on the rise of the knowledge economy, the growth of flexible working and organisational responses to the changing demographic profile of the workforce. Only by factoring in these influences can we gauge the scale of change in the spatial ordering of work.

In addition, social survey data on job quality are rarely collected alongside data on where work is carried out. This makes it difficult to assess the associational consequences that work location has for work effort, job-related well-being and work-life balance. The article applies social exchange theory and border theory to make theoretically informed predictions about the nature of these associations and their direction. These hypotheses are, then, tested empirically using large-scale survey data, hence offering another contribution to the debate.

## Theories and evidence

Anecdotal evidence, even personal experience, suggests that paid employment is no longer confined to designated hours carried out in a specified place. This applies especially to managers, professionals and other white-collar workers. Greater technological connectivity facilitates this process by enabling work to be carried out wherever workers happen to be and whatever the time (Messenger and Gschwind, 2016). The costs associated with purchasing, building and maintaining sites as places of work can be high and are difficult to justify if usage levels are low and work mobile. This is especially so for office work which can be conducted using electronic technologies that make possible communication—in word, image and speech—with those who are geographically remote (Bain and Taylor, 2000; Felstead *et al.*, 2005).

The raw statistics support this narrative. According to the Office for National Statistics (ONS) 4.2 million people spent at least half of their working time carrying out work at, from or in the same grounds and buildings as their home in 2014. This represents 13.9 per cent of those employed in the UK and 'is the highest rate since comparable records began in 1998' (ONS, 2014: 1). Research carried out by the Trades Union Congress (TUC) suggests that over the last decade the number of employees who say they usually work from home has increased by a fifth (TUC, 2016). While the size of the spatial shift varies according to the data sources used and/or the definitional protocols applied, the descriptive evidence suggests that more work is being done away from the conventional workplace. Analysis of the decennial Census of Population, for example suggests that the proportion of people working mainly at or from home increased from 9.2 per cent in 2001 to 10.3 per cent in 2011 (Gower, 2013).

The direction of change is similar elsewhere, although definitions vary. In the US, for example the share of workers doing some or all of their work at home grew from 19.6 per cent in 2003 to 24.1 per cent in 2015 (BLS, 2016). In Sweden, too, the prevalence of working partly at home has increased from 5.9 per cent in 1999 to 19.7 per cent in 2012 (Vilhelmson and Thulin, 2016). The same applies across Europe as a whole. According to data collected by Eurofound in 2010 around a fifth of workers across Europe said that they mainly worked at home, on clients' premises, on sites outside the factory or office, and/or in cars or other vehicles. In 2015 around three out of ten said they worked in such places on a daily basis.

Despite this descriptive evidence of change, caution needs to be exercised since theories of social and economic change may account for some, or all, of the shift. This article focuses on three theories. The first is based on the claim that an economic system is emerging which places more emphasis on intangible economic assets, such as new ideas, software and services, and less on those which take physical form. In this 'knowledge economy', more emphasis is placed on educated professionals who access bodies of theoretical, specialised and abstract knowledge, and so add value not with their

hands, but with their heads (Drucker, 1959; for a critique, see Thompson *et al.*, 2001). Altering the balance between the physical and the metaphysical nature of work weakens the fixity of work since knowledge creation is less spatially bounded. The theory of the knowledge economy, then, would suggest that the growth in remote working can be partly explained by this economic shift. There has, for example been a marked increase in the share of the workforce employed as managers, professionals and associate professionals over the last two decades. Their employment share rose by ten percentage points between 1994 and 2014, and they are expected to account for around a half of all workers by 2024 (Wilson *et al.*, 2016: table 4.1). The article examines to what extent these occupational and industrial shifts—taken as a proxy for the knowledge economy—can account for the growth in remote working.

The second explanatory theory is the idea that employers are engaging labour in ways which are more responsive to when and where work is needed. This is based on the model of the 'flexible firm' in which employers treat parts of the workforce differently to increase numerical and functional flexibility (Atkinson and Meager, 1986). The former is secured through 'flexible working'; that is, 'a type of working arrangement which gives a degree of flexibility on how long, where, when and at what times employees work' (CIPD, 2016). It includes a long list of ways in which employers dice and slice working time as well as adjust the location of work to business demands. However, as with other non-standard work, those who work remotely are often flexible in multiple ways. For example two-thirds of those working at least half of their time at or from home are self-employed and a third of them work part-time (ONS, 2014). Working remotely may, therefore, go hand in hand with other types of flexible working and trends in these forms of work may explain at least part of the growth of remote working.

Related to the flexible working hypothesis is the idea that employers adapt and change in response to societal norms and expectations. So, in addition to the benefits of employer-inspired flexible working outlined above, the changing demographic nature of the workforce may prompt employers to offer working arrangements which better suit employees' domestic and personal circumstances. This is known as organisational adaptation and is the third theory we examine (Goodstein, 1994; Ingram and Simons, 1995). Faced with the feminisation of the labour force and the increased participation of mothers in the labour market, the hypothesis is that employers adapt their employment practice to cater for the needs of such groups for whom remote working is attractive (Eurofound and ILO, 2017: 17). For example between 1981 and 2014, 1.3 million women have been added to the full-time workforce at a time when the number men similarly employed has been static (Wilson *et al.*, 2016: figure 2.4). Government, too, has put added pressure on employers through legislative support—first introduced in 2003—for workers requesting flexible working, including the right to work exclusively or partly from home. This right has been gradually extended to more and more employees, and since 2014 all employees with at least 26 weeks' continuous employment can request a change in hours, times or location of work. By including data on the changing demographic profile of the workforce, we assess the impact this may have in explaining the growth of remote working.

Taking these theories together, some have gone on to suggest that 'of all the shifts happening in the labour market at the moment, this [remote working] seems the least revolutionary of the lot' (Flip Chart Fairy Tales, 2014). In this article, then, we assess the strength of this argument by factoring in shifts towards the knowledge economy, the rise of flexible working and changing demographics of the workforce.

Another key feature of the debate surrounds the benefits of remote working. The public discourse suggests a 'win-win' situation in which both employers and employees gain. Employers' gains come from a more productive workforce which uses less space and is more cost effective to house, and workers' gains stem from the prospect of a better work-life balance, thereby increasing levels of job satisfaction and organisational commitment.

These ideas are based on two partially overlapping theories. The first is social exchange theory which has been used by organisational theorists to explain the



motivations behind employee behaviours and attitudes (Gouldner, 1960; Blau, 1964). It is based on the idea that parties must abide by certain rules and norms of exchange that generate reciprocity (Cropanzano and Mitchell, 2005). Social exchange theory in this article's context, then, suggests that in exchange for the opportunity to alter where they work workers will be prepared to make sacrifices such as doing unpaid work, working harder to get noticed or putting in extra effort out of obligation to the employer and/or office-bound colleagues (Golden, 2007; Kelliher and Anderson, 2010; de Menezes and Kelliher, 2011; Elsbach *et al.*, 2012).

However, border theorists argue that the transition from home to work is not always easy. The outcome of interest here is the achievement of work-life balance which is defined as 'satisfaction and good functioning of work and home, with a minimum of role conflict' (Clark, 2000: 751). It is argued that this is more difficult where the borders between home and work are intentionally blurred as is the case for remote workers. The effect is that work pressures spill-over into non-work life as reflected in the inability to 'switch off' and the difficulties encountered in unwinding at the end of the work day. The prediction of border theory, then, is that remote working will heighten negative work-home spill-overs as suggested by several qualitative studies (Mirchandani, 2000; Crosbie and Moore, 2004; Marsh and Musson, 2008).

Despite the qualitative evidence, workers who take part in organisational case studies either as interviewees or survey respondents are more positive. However, the analytical power of these studies is sometimes weakened by either their reliance on 'before and after' recall comparisons or their inability to make comparisons between similar employees whose work location differs. For example Maruyama *et al.* (2009) identify the correlates of positive work-life balance, but only for the 1,866 teleworkers surveyed. Nevertheless, such studies have demonstrated the importance of the extent to which work is carried out away from the conventional workplace for worker well-being which increases rapidly initially and then starts to level off the greater the level of detachment (Golden and Veiga, 2005). Similar organisational surveys have revealed the existence of a positive association between the intensity of remote working and other benefits such as reducing the strain of working under time pressure and enhancing the ability to alter work arrangements to suit personal circumstances (Sardeshmukh *et al.*, 2012). Other organisational surveys provide similar insights, but significance tests and multivariate analysis are not always carried out (Beauregard *et al.*, 2013).

Even so, there are a number of robust organisational-level studies. For example Bloom *et al.* (2015) compared the performance and satisfaction outcomes of employees who had volunteered to take part in a randomised control trial of 994 call centre operators. The working at home group significantly outperformed their office-bound counterparts since they spent longer logged onto the system (extensive work effort) and answered more calls per minute (intensive work effort). Despite work intensification, levels of job satisfaction also rose, and job turnover fell. The only downside was that at home workers' chances of promotion were reduced. Based on a survey of 2,066 workers drawn from three large multi-national organisations, Kelliher and Anderson (2010) came to similar conclusions. They, too, discovered that remote workers had statistically higher levels of job satisfaction and organisational commitment than workplace-bound workers. However, consistent with the predictions of social exchange theory, subsequent qualitative interviews suggested that this was at the cost of work intensification.

Studies which use national general social surveys corroborate some of the findings outlined so far, but they are rarer. Using the British Household Panel Survey (BHPS), for example Wheatley (2012) demonstrates that those who work at home are more satisfied with their working hours and their job overall. Furthermore, the latter remains statistically significant when panel members change their location of work while holding other factors constant, that is the latter causes movements up and down in overall job satisfaction. This analysis has also been extended to Understanding Society—a longitudinal survey of 40,000 households—which subsumed the BHPS in 2009 (Wheatley, 2017). However, these studies rely on job satisfaction as the only job outcome indicator. There is an urgent need therefore for quantitative analysis based on nationally representative surveys which examines

whether remote working is associated with a reduction or an enhancement of specific features of the job such as work effort, well-being and work-life balance. The second aim of the article, then, is to test—using nationally representative survey data—the validity of the claims made by social exchange theorists as well as those who advocate border theory.

### Data sources, methods and measures

One of the most enduring aspect of the debate is how remote working is defined and operationalised (Mirchandani, 2000; Sullivan, 2003). In response to this challenge, some researchers have set about defining precisely what they mean by the terms they use and reinterpreting the work of others accordingly (Felstead and Jewson, 2000; Sullivan, 2003; Haddon and Brynin, 2005; Wilks and Billsberry, 2007). In this article, however, we take a more pragmatic data-driven approach since appropriate large-scale survey data are difficult to come by. Inevitably, then, the estimates of remote working differ—sometimes substantially—in what follows. However, our aim is to identify jobs which are carried out mainly or partly away from the premises of the employer.

The article draws on two data sources. For the trend analysis, we use the Labour Force Survey (LFS) series since each survey comprises a random sample of individuals in the UK. Almost 40,000 households are contacted and around 45,000 workers aged 16 and above are interviewed. In 1981, the LFS carried its first question on the location of work. Respondents were asked ‘do you work mainly’ in one of four locations: in your own home, in the same building or grounds as your home, in different places using home as a base, or somewhere quite different from home. Despite offering a unique perspective on the location of work, eleven years were to pass before the question was repeated. It reappeared in 1992 when the LFS was carried out quarterly—appearing in the spring and autumn quarters—and from 1997 it has been asked every calendar quarter.

For the effort, well-being and work-life balance analysis, we use the Skills and Employment Survey (SES) series. This is a national survey periodically carried out in Britain which focuses on the skills workers use at work and the quality of their working lives (see Felstead *et al.*, 2015). Two work location questions were included in the 2001, 2006 and 2012 versions of the surveys, which collected data from 4,470, 7,787 and 3,200 workers, respectively. These capture the main and occasional work locations of individuals along with a number of additional response options, including working in a variety of places (using either home or the office as a base) and working on the move. Neither of these options are fully captured by the LFS, hence the proportions reported as remote workers in SES are substantially larger.

Stacking the LFS series together provides an insight into changes over time. Given the frequency with which questions on the location of work are asked, the trend analysis for this article is based on 25 surveys—the 1981 LFS and the spring quarters for the years 1992–2015. However, some of the analysis reported here is restricted to shorter time periods given data availability. The multivariate analysis requires consistently measured covariates over time and thus excludes data from 1981. Furthermore, only between 1997 and 2014 has the LFS included a question which makes it possible to track the extent to which work is being carried out remotely at least one full day a week; that is, ‘somewhere quite different from home’. This means, for example that a respondent who spends four days a week working in an office, but spends one day a week working at home would be captured by this question. However, working at home for periods of less than a full day would not be captured nor would a few hours over several days, even if they added up to a full day’s work. It should be noted that the LFS estimates are therefore conservative.

The trend analysis proceeds as follows. The relevant LFS files are first pooled and then a series of annual changes of the percentage remote working are calculated—these are the raw observed changes on which many of the descriptive reports and newspaper commentaries discussed above are based. A series of logit models using a complete set of year dummies and covariates relating to shifts in the economic



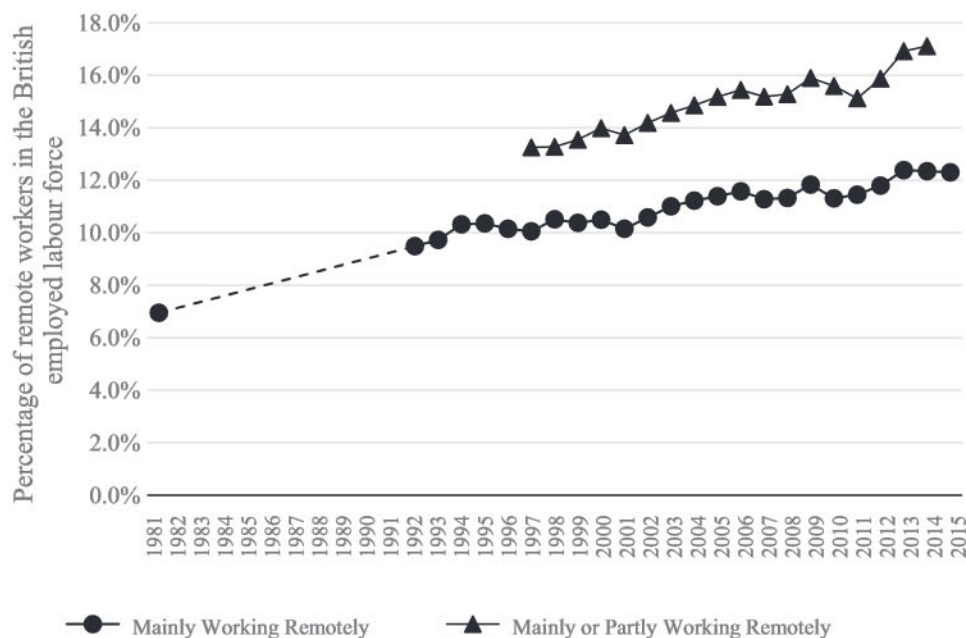
structure, the rise in flexible working in general, and the changing demographic profile of the workforce over the entire period of observation. From this, we calculate predicted remote working probabilities for respondents in the survey. By setting the 1992 (1997) as the reference year, the year dummies trace the evolution of remote working over time. As we add covariates to the logit regression, we condition out potential sources of compositional change that might explain the rise of remote working.

We add three sets of covariates which correspond to the theories outlined above. For the knowledge economy, we interact 2-digit occupational codes with broad industrial sectors (agriculture, mining and energy, manufacturing, construction, distribution and accommodation, transport and communication, finance and business services and other services) to create a list of 214 occupation-industry dummies.<sup>1</sup> Each 2-digit occupation is thus embedded within a specific industry context, hence ensuring, for example that office clerks in manufacturing are compared with office clerks in finance and business services. Flexible working is measured by data on usual working hours, employment status and the degree of contract permanency. Lastly, age, gender, the number of children in the household, and an interaction between gender and the number of children are entered to reflect the changing demography profile of the employed workforce. Any remaining unexplained trend patterns are captured by the set of year dummies. From these, the average annual change is derived by dividing the last year effect by the number of periods under investigation times 100 to give the percentage point change. This unexplained time trend gives a better assessment of the scale of the spatial 'revolution'.

Given the relative size of SES along with our particular interest in examining the association greater locational flexibility has with job outcome indicators, we compare those who work in 'a single workplace away from home (e.g. office, factory or shop)' either mainly or partly with those who work elsewhere, that is remotely. We make these comparisons across three conceptually distinct measures of effort. The first is intensive work effort (i.e. effort expended within a given period). This is taken from a four-point agreement scale to the statement: 'My job requires that I would very hard'. The second measure focuses on extensive work effort (i.e. working longer than formally required). This is based on a four-point response to the statement that: 'I often have to work extra time, over and above the formal hours of my job to get through the work or to help out'. Discretionary effort is our third measure and is designed to capture voluntarily going beyond expected effort levels. It is taken from a four-point level scale in response to the question: 'How much effort do you put into your job *beyond* what is required?' (Felstead and Green, 2017)

However, it is commonly suggested that remote workers are more committed to the organisation, are more enthusiastic about the job and exhibit higher levels of job satisfaction, and therefore expend more effort (as suggested by social exchange theory). All three surveys ask respondents six questions widely used to derive levels of organisational commitment—three relate to employee attitudes and three relate to employee behaviours. Respondents were asked to indicate, on a four-point Likert scale, their level of agreement or disagreement with six statements such as 'I find that my values and the organisation's values are very similar' and 'I would turn down another job with more pay to stay with this organisation'. From this we create an index. Similarly, an enthusiasm scale is derived from questions asking: 'Thinking of the past few weeks, how much of the time has your job made you feel each of the following...?' Respondents were then presented with a series of adjectives, each describing a different feeling: 'depressed', 'gloomy', 'miserable', 'cheerful', 'enthusiastic' and 'optimistic' (Warr, 1990). The response set comprised six points ranging from 'never' to 'all of the time' (with negative items reversed). Respondents were also asked to assess on a seven-point scale how satisfied they are with their job. Finally, we examine the drawbacks of remote working, highlighted by border theory and substantiated in qualitative studies (Mirchandani, 2000). For this, we create a summary work-home spill-over indicator from responses to two questions: the inability to switch off at the end of the workday, and the difficulty of unwinding and relaxing after work (see Table A1 for detail on all the SES outcome variables).

To assess what consequences remote working might have, we examine whether the responses given by remote workers are significantly different from those



**Figure 1: Trends in remote working, UK, 1981–2015: Labour Force Survey estimates**  
*Note:* Estimates taken from the spring quarter of each LFS and the annual LFS in the case of 1981. Results are weighted according to population estimates and the sample is those aged 20–59 who are in paid work in the UK.  
*Source:* spring quarter Labour Force Surveys, 1981–2015.

working in a fixed location in a series of linear regressions. These regressions also control for the factors used in the trend analysis, thereby revealing *ceteris paribus* the associational consequences remote working has for work effort, well-being and work-life balance.

### Assessing the growth of remote working

The LFS analysis replicates the findings reported earlier in that they show remote working growing among 20–59 year olds who are in work. The proportion working at least one day a week away from the conventional workplace grew by almost four percentage points from 13.3 per cent in 1997 to 17.1 per cent in 2014. Other LFS evidence suggests it grew much earlier. In 1981, for example the proportion mainly working remotely stood at 7.0 per cent, but by 2015 it had increased by more than five percentage points to 12.3 per cent (see Figure 1).

Disaggregating the LFS figures suggests that remote working has increased in all but factory-based work where machine operation and/or labouring is required (see Figure 2a, b). In contrast, the prevalence of remote working among ‘high skill’ and ‘middle skill’ workers—defined here according to occupation—has grown substantially with a five percentage point increase in the proportion of ‘high skilled’ job holders working remotely for at least one day a week between 1997 and 2014. However, the growth pattern is broadly comparable across the gender divide (see Figure 3a, b). Similarly, the impact of the economic cycle is not evident in these descriptive data.

The results from SES further corroborate the argument that the conventional workplace is not the sole place of work for a sizeable minority in Britain. Around a third (33.6 per cent) of workers in 2012 reported that they mainly worked outside ‘a single



Figure 2a

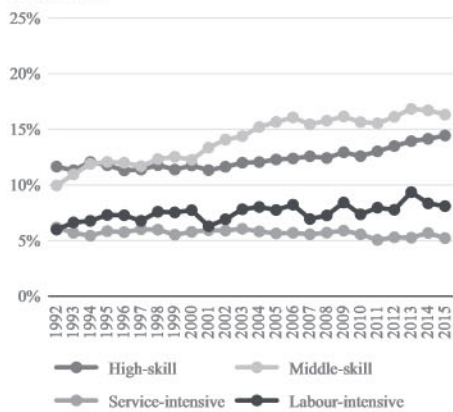


Figure 2b

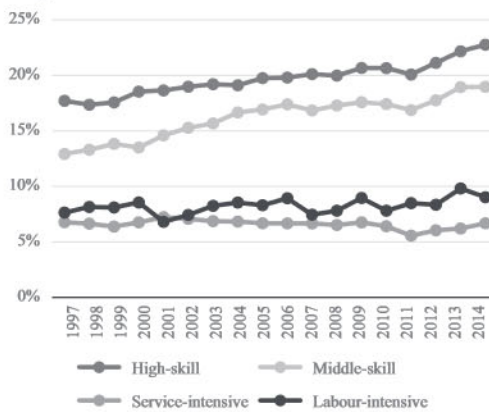


Figure 2: (a) Trends in mainly working remotely by occupation. (b) Trends in working remotely at least one day a week by occupation

Notes: High-skill: Managers, professionals, technicians and associate professionals. Middle-skill: Clerks, skilled agricultural workers, craft and related trades. Service-intensive: service workers and sales workers. Labour-intensive: Plant and machine operators, elementary occupations. Sample and weights as reported in Figure 1.

Source: spring quarter Labour Force Surveys, 1992–2015 and 1997–2014.

workplace away from home (e.g. office, factory or shop)’ in the week before interview. Furthermore, the proportion working mainly in these conventional workplaces has been a downward trend—falling from 74.8 per cent in 2001 to 66.4 per cent in 2012. The use of unconventional locations, on the other hand, has risen. So, by 2012 a fifth (20.4 per cent) of workers were mainly working in a variety of different places, up from 17.0 per cent in 2001. There were also rises among those working at home and those working in the vicinity of the home (see Table 1).

How much of this trend can compositional change explain? After all, changes in the economic structure, the prevalence of flexible working arrangements and secular

Figure 3a

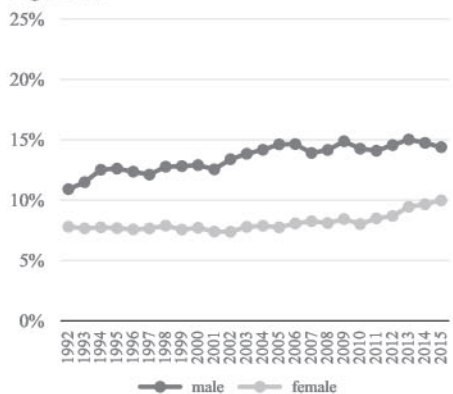


Figure 3b

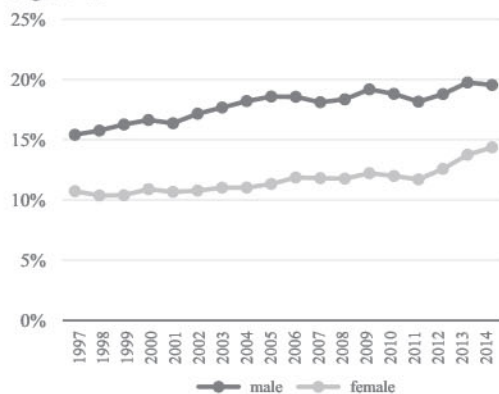


Figure 3: (a) Trends in mainly working remotely by gender. (b) Trends in working remotely at least one day a week by gender

Note: Sample and weights as reported in Figure 1.

Source: spring quarter Labour Force Surveys, 1992–2015 and 1997–2014.



Table 1: Extent of remote working: skills and employment survey estimates

Main work location	2001 (%)	2006 (%)	2012 (%)
At home	2.9	3.6	4.4
In same grounds and buildings as home (e.g. adjoining property or land)	1.3	2.0	4.6
In a single workplace away from home (e.g. office, factory or shop)	74.8	72.0	66.4
In a variety of different places of work (e.g. working on clients' premises or in their homes)	17.0	17.5	20.4
Working on the move (e.g. delivering products or people to different places)	4.1	5.0	4.2

Note: Weighted estimates.

Source: Skills Survey 2001, Skills Survey 2006, and Skills and Employment Survey 2012.

trends in the composition of the British labour force may have contributed to, or even fully determined, the aggregate trend pattern in remote work. To examine this possibility, we decompose the time series into five components. One reflects the descriptive changes observed in the data, three correspond to the compositional changes outlined above and one takes the three explanations in combination (see columns 1–5 in Tables 2 and 3).

Column 1 in Tables 2 and 3 report the observed average annual change; the prevalence of workers working mainly remotely has increased by on average 0.116 percentage point per annum, whilst working at least on one day a week remotely has grown at a greater pace of 0.219 percentage point per annum. As additional covariates are added to the logit model, the 'unexplained' change falls as one would expect. The slightly more potent explanation is the one offered by knowledge economy theorists. When entered into the estimations, proxies for this theory explain a quarter of the growth in those who mainly work remotely (i.e.  $(0.116 - 0.088)/0.116 = 0.24$ ) and a fifth of the growth in those who work remotely for at least one day a week (i.e.  $(0.219 - 0.175)/0.219 = 0.20$ ). The other two possible explanations considered here—the rise in flexible working and the changing demographic profile of the workforce—are also supported (note the marginal effects in Tables 2 and 3). However, even after accounting simultaneously for the shift towards the knowledge economy, the rise of flexible working arrangements, and the changing demographic make-up of the employed workforce, there remains a positive, statistically significant and sizeable residual growth of remote working that is not explained by such observed determinants. This holds for both the narrow and wider definitions of remote working. Comparing the estimates in column (5) with the average annual change in column (1) in both tables suggests that around two-thirds of the growth in remote working *cannot* be attributed to changes in the composition of the British employed labour force (i.e.  $(0.076/0.116)*100 = 65.5$  per cent) for Table 2 and  $(0.141/0.219)*100 = 64.4$  per cent for Table 3). The scale of the 'spatial revolution', then, is a little more modest than suggested by the headline figures, but significant nonetheless.

Additional LFS data also show that technology may facilitate the detachment of work from place. In 1997 a fifth (21.8 per cent) of those working at least one day a week remotely reported that they did *not* rely on a phone and a computer to do so, but by 2014 this had fallen to around one in ten (9.0 per cent). This provides empirical support for the idea that technology is able to stretch the reach of the conventional workplace well beyond its physical boundaries. However, the LFS does not ask all workers whether execution of their work tasks is dependent on these technologies. Therefore, we cannot gauge its differential effect on work location.

Table 2: Unexplained average annual change in mainly working remotely, 1992–2015

	No composition effects (1)	Effect of the knowledge economy (2)	Effect of flexible working (3)	Effect of demographic profile (4)	All effects listed in previous columns (5)
Unexplained annual change expressed in percentage points (standard errors in parentheses)	0.116*** (0.009)	0.089*** (0.009)	0.100*** (0.008)	0.094*** (0.009)	0.076*** (0.008)
Tjur's pseudo $R^2$	0.000	0.122	0.319	0.022	0.364
Number of observations	1,146,778	1,146,778	1,146,778	1,146,778	1,146,778

Notes: Weighted estimations of the 'unexplained' average annual change in remote working from a logit model with a full set of year dummies and covariates. The reference year is 1992. The 'unexplained' average annual change is derived from the marginal effect of the most recent year dummy divided by the number of periods observed times 100. *Knowledge economy*: Occupation (2-digit ISCO88 codes, derived from SOC1990 and SOC2000 occupation codes) interacted with industry (agriculture, mining and energy, manufacturing, construction, distribution and accommodation, transport and communication, finance and business services, other services/rest). *Flexible working*: Usual working hours (<16, 16–29, 30–39, 40–48, 49+), employment status (employee, manager, foreman, self-employed with employees, own-account worker), temporary work. *Demographic profile*: 5-year age groups, female, number of children under 5 in the household, number of children between 5 and under 16 in the household, marital status as well as interactions between female and the number of children dummies. Employed and self-employed workers aged 20–59. Tjur's pseudo  $R^2$  measures model fit as the mean differences in the predicted probabilities across outcome categories; these are cross-sectional statistics which cannot be used to compare the predictive power of the models designed to assess the correlates of change.

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

Source: spring quarter Labour Force Surveys, 1992–2015.

## Assessing the beneficial consequences of remote working

Several studies have examined the association that remote working has with job satisfaction, which is an averaged evaluation of different aspects of the job given by each worker. Inevitably, such evaluations are reflective of each worker's individual preferences and expectations and circumstances with the same objective job features evaluated differently from worker to worker. This is because job satisfaction represents an amalgam of the varied norms and expectations of job holders and the objective features of the job (Brown *et al.*, 2012). However, data on the latter together with where work is carried out are collected more infrequently. Fortunately, the SES data offer a wider set of indicators focused on work effort, job-related well-being and work-life balance.

A key argument in the debate is the suggestion that remote working brings business benefits. These come not only from economising on employer-provided physical work



Table 3: Unexplained average annual change in working remotely at least one day a week, 1997–2014

	No composition effects	Effect of the knowledge economy	Effect of flexible working	Effect of demographic profile	All effects listed in previous columns
	(1)	(2)	(3)	(4)	(5)
Unexplained annual change expressed in percentage points (standard errors in parentheses)	0.219*** (0.014)	0.175*** (0.014)	0.178*** (0.012)	0.203*** (0.014)	0.141*** (0.012)
Tjur's pseudo R <sup>2</sup> (in %)	0.000	0.122	0.326	0.027	0.368
Number of observations	845,260	845,260	845,260	845,260	845,260

Notes: As in Table 2, except that the reference year here is 1997.

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

Source: spring quarter Labour Force Surveys, 1997–2014.

space, but from the increased effort workers put into the job as predicted by social exchange theory. The SES data provide evidence that the effort of remote workers is indeed higher than those working in conventional fixed places of work. Significantly greater proportions of the former than the latter strongly agree that their job requires them to work very hard, that they work beyond formal working hours to get the job done and that they put a lot of effort beyond what is required. For example 39.0 per cent of remote workers said that it was 'very true' that 'I often have to work extra time, over and above the formal hours of my job, to get through the work or to help out' compared to 24.1 per cent of those in fixed workplaces. The regression results provide a stronger test of these differences since they take into account the different compositions of the two groups. They, too, suggest that the three different types of work effort expended by remote workers are significantly higher than otherwise identical fixed-place workers. This supports other research which suggests—while failing to provide survey evidence—that imposed and voluntary work effort is higher among remote workers (Kelliher and Anderson, 2010). According to our evidence, this suggestion is correct; the working day is longer, the intensity of each hour worked is higher and more voluntary effort is expended (see columns 1, 2 and 3 in Table 4).

Remote workers also display more positive attitudes towards the employing organisation. Seven out of ten (70.5 per cent) remote workers, for example agreed or strongly agreed that they would not move to another organisation for higher pay compared to around six out of ten (62.5 per cent) conventionally sited workers. Organisational commitment is measured using a further five statements from which an index is then created. All other things being equal, organisational commitment is significantly higher for remote workers as evidenced by the significant coefficient in the regression reported in column 4 of Table 4.

Similarly, remote workers report that their jobs are more pleasurable and stimulating. The enthusiasm scale summarises the responses to six questions. The descriptive results show that remote workers are significantly more enthusiastic about their jobs.

Table 4: *Assessing the association of remote working with job quality: multivariate tests*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Working hard		Working beyond formal hours	Expending voluntary effort	Organisational commitment	Enthusiasm scale	Overall job satisfaction	Work-home spill-over
Remote working	0.029** (0.013)	0.267*** (0.021)	0.041** (0.013)	0.056*** (0.011)	0.081*** (0.017)	0.128*** (0.024)	0.151*** (0.022)
Controls <sup>1</sup>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.104	0.198	0.068	0.071	0.040	0.044	0.148
N	13,087	13,086	13,088	12,111	13,080	13,086	13,087

*Notes:* These include dummies for: year of survey; sex; employee status; permanency; full-time; married (or living as) status; presence of dependent children; 8 occupational dummies; 16 industrial dummies; 4 dummies for qualification level required for job; 6 dummies for training time for the type of work; 5 dummies for learning time required for the job; 12 regional dummies; as well as a continuous variable for age.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

*Source:* pooled 2001, 2006 and 2012 surveys in the Skills and Employment Survey series.



Furthermore, remote workers also report significantly higher levels of job satisfaction. This is illustrated by the seven percentage point gap between the proportions reporting that they are very satisfied or better with their jobs. These findings are substantiated in regression analyses which show that for otherwise identical workers remote working is associated with significantly higher levels of enthusiasm for the job and overall job satisfaction (see columns 5 and 6 in Table 4).

However, borderless working also carries costs as highlighted by a number of qualitative studies (Mirchandani, 2000; Marsh and Musson, 2008). These relate to the difficulties of insulating the world of work from other aspects of life when both worlds collide and overlap. This is reflected in relatively high reported difficulties encountered in 'switching off' and unwinding at the end of the work day. These are all significantly higher among remote workers. For example around a third (36.0 per cent) of conventionally sited workers kept worrying about job problems at least some of the time shortly before they were surveyed, but among remote workers the proportion facing these difficulties was eight percentage points higher. Difficulties of switching off and unwinding are combined into a single measure for the purposes of the regression analysis. These results underline the downside of remote working suggested by border theory with negative spill-over significantly higher for remote workers all other things being equal (see column 7 in Table 4). This suggests that the effects of remote working may be negative for work-life balance, while beneficial for workers' attachment to the organisation, enthusiasm for the job and job satisfaction. For these benefits, remote workers appear willing to work harder and longer, hence supporting the predictions of both social exchange and border theory.

## Conclusion

The aim of this article has been to critically assess two of the most prominent presumptions of the 'spatial revolution'. First, it is presumed that work is losing its spatial fixity and as a result workers are 'escaping to the country', 'shunning the commute' and proclaiming that 'the office is dead'. The second presumption is that carrying out work away from a central workplace is beneficial to employers and workers alike. Employers are reckoned to benefit from the increased work intensity and longer hours triggered by the detachment of work from place. Workers, too, are presumed to benefit with greater spatial and temporal flexibility prompting increased levels of organisational commitment, enthusiasm and satisfaction.

However, the existing evidence base for both presumptions is suspect. The trend data are often descriptive and do not take into account compositional changes which might explain the raw figures as several theories suggest. The evidence for the benefits of remote working is also incomplete. Previous analyses, for example have sometimes been based on small sample sizes, have focused on company trials, have used data using a limited range of job outcome indicators and/or have not tested their findings against similarly positioned conventionally located workers. Moreover, based on the drawbacks of remote working, there have been a number of high-profile examples of organisations performing U-turns on its use. In February 2013, for example Yahoo! announced that it was banning workers from working at home because 'speed and quality are often sacrificed', choosing instead to highlight the business benefits of 'physically being together' (*Independent*, 26 February 2013). Hewlett-Packard followed suit a couple of months later saying that 'HP needs all hands on deck ... the more employees we can get into the office the better company we will be' (*All Things D*, 8 October 2013). While these moves appear to fly in the face of much of the evidence reviewed in this article, they provide further motivation for a re-examination of the presumed growth of remote working and its benefits.

Despite these doubts, we find that around two-thirds of the increase in remote working *cannot* be explained by compositional factors suggested by several theories of workplace change. These include the alleged movement to the knowledge economy, which emphasises the mental rather than physical aspects of work and hence the

detachment of work from place (Drucker, 1959). The growth in flexible employment which is claimed to signal employers' greater willingness to reorganise working time and space (Atkinson and Meager, 1986). Furthermore, organisational adaption theory suggests that employers are under societal pressure to adapt their employment practices to the demographic make-up of the workforce (Goodstein, 1994; Ingram and Simons, 1995). In this context, this means providing more remote working opportunities for groups such as working parents for whom this way of working is attractive.

The size of the residual unexplained component after taking these theories into account suggests the growth in remote working—recorded in official statistics drawn from the LFS and corroborated by other evidence such as the Census and SES—is not a statistical artefact but represents a change, if not a revolution, in the location of work. This finding is consistent with the argument that there is a general movement among employers to use technology to detach work from place, where they can. We also find evidence in support of social exchange theory with remote workers doing unpaid work, working harder and/or putting in extra effort in return for the opportunity to alter where and when they work (cf. Kelliher and Anderson, 2010). Remote workers are also *ceteris paribus* more committed, enthusiastic and satisfied with their job than their conventionally located counterparts, but find it difficult to redraw the line between home and work as predicted by border theory.

Nevertheless, the article has limitations. First, the measure of remote working used is often based on surveys steeped in a tradition that sees a clear divide between home and work, with little in between. For example the LFS location of work questions focus on working at or from home. This does not allow us to assess the extent to which the conventional workplace is itself being used differently—possibly as a base from which to visit clients or as a drop-in centre—or the full extent to which people are working while moving from place to place. The existing literature has similarly 'placed significantly more emphasis on the movement of work into the home than work done "on the move"' (Hislop and Axtell, 2007: 37) and may therefore be missing some of the major developments in the location of work (see also Vartiainen and Hyrkkänen 2010). This blind spot may be significant. For example a survey of 25,000 rail passengers in Britain suggests that in 2010 over half (54 per cent) of business travellers spent at least some of their travel time working and a third (35 per cent) claimed doing so for the majority of that time (Lyons *et al.*, 2011).

Second, 'remote working' is a heterogeneous category like other non-standard employment forms. To some extent the article takes this variability into account by including controls in the regressions. However, it remains possible that the results vary for particular types of remote workers.

Third, despite controlling for a number of observed variables, we cannot be sure of the causal rather than associational links between work and effort levels, job-related well-being and work-life balance. We cannot, therefore, rule out the possibility that unobserved variables influence both the propensity to work remotely and the outcomes observed. In other words, the estimations presented here cannot determine whether a change in the location of work *ceteris paribus* drives changes in effort, well-being and work-life balance.

Despite these drawbacks and some high profile employer U-turns, the evidence presented suggests that remote working is, on the whole, advantageous to employers and employees. It also suggests while we may not be witnessing a full-bodied revolution, the detachment of work from place is undeniably an important aspect of the changing nature of work in the twenty-first century. It is therefore a theme which justifiably merits close attention by those who read and write for journals such as *New Technology, Work and Employment*.

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## Note

<sup>1</sup> To derive a commensurate occupational classification, we map occupational groups to the corresponding occupational codes of the International Standard Classification of Occupations 1988 (ISCO-88) using official crosswalks published by ONS. Similarly, industrial sectors are mapped onto the 1-digit industries of the Standard Industrial Classification 1980.

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## Appendix

Table A1: Skills and employment survey: variables, descriptions and weighted means

Variable	Descriptions	Weighted means
Remote working	'In your job, where do you mainly work? Please answer from this card. A: At home B: In the same grounds and buildings as home (e.g. in adjoining property or surrounding land) C: At a single workplace away from home (e.g. office, factory or shop) D: In a variety of different places of work (e.g. working on clients' premises or in their homes) E: Working on the move (e.g. delivering products or people to different places)'. Respondents were then asked: 'Still looking at [this card], in the last seven days have you spent at least ONE FULL DAY working in any of the other places on this card?' Those not answering C to either question are defined as 'remote workers' (0–1)	0.39
Working hard	Respondents were asked how much they agreed or disagreed that: 'My job requires that I work very hard'. 'Strongly agree' (4); 'agree' (3); 'disagree' (2); and 'strongly disagree' (1)	1.71
Working beyond formal hours	Respondents were asked how true it was that: 'I often have to work extra time, over and above the formal hours of my job, to get through the work or to help out'. 'Very true' (4); 'true' (3); 'somewhat true' (2); and 'not at all true' (1)	1.39
Putting in voluntary effort	'How much effort do you put into your job <i>beyond</i> what is required?' 'A lot' (4); 'some' (3); 'only a little' (2); or 'none' (1)	2.40



Table A1 (contd)

Variable	Descriptions	Weighted means
Organisational commitment	Respondents were asked to what extent they agreed or disagreed with the following statements' using a four-point (1–4) agreement scale (with 4 = 'strongly agree'): 'I am willing to work harder than I have to help this organisation succeed.'; 'I feel very little loyalty to this organisation' (reverse scored); 'I find that my values and the organisation's values are very similar'; 'I am proud to be working for this organisation'; 'I would take almost any job to keep working for this organisation'; and 'I would turn down another job with more pay to stay with this organisation'. An additive (1–4) index is produced (alpha = 0.80)	2.68
Enthusiasm scale	Thinking of the past few weeks, how much of the time has your job made you feel: 'depressed', 'gloomy', 'miserable', 'cheerful', 'enthusiastic' and 'optimistic'. The response set comprised six points (1–6) ranging from 'never' to 'all of the time' (with the three negative items reversed). An additive (1–6) index is produced (alpha = 0.81)	4.29
Overall job satisfaction	'All in all, how satisfied are you with your job?' Respondents were offered a seven-point (1–7) satisfaction scale (with 'completely satisfied' = 7)	5.35
Work-life spill-over	'Thinking of the past few weeks, how much of the time has your job made you feel each of the following ... After I leave my work I keep worrying about job problems' and 'I find it difficult to unwind at the end of a workday'. 'Never' (1); 'occasionally' (2); 'some of the time' (3); 'much of the time' (4); 'most of the time' (5); and 'all of the time' (6). An additive (1–6) index is produced (alpha = 0.79)	2.40