Can the Changing Nature of Jobs Account for National Trends in Job Satisfaction?

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Abstract

We investigate whether trends in job satisfaction, which arguably signal trends in worker well-being, can be explained by changes in the quality of jobs. There were falls in job satisfaction in both Britain and Germany. Elsewhere job satisfaction has been either stable or declining very slowly. In many countries, the series of data on job satisfaction is too short to be confident that any secular trend has taken place.

We estimate fixed effects models of the determinants of job satisfaction, in order to attempt to account statistically for trends in job satisfaction in Britain and in Germany. We find that:

- The intensification of work effort and declining task discretion account for the fall in job satisfaction in Britain. The modest rise in participation in organisational decision-making only mitigated the downward pressure on job satisfaction to a small extent.
- Contrary to what might be expected from popular commentary, changing job insecurity does not explain the fall in job satisfaction in either country.
- In Germany there was a modest fall in the proportion of people working the number of hours that they wanted to. However, while working too few or too many hours is a significant source of job dissatisfaction, the changes were too small to have made much of an impact on job satisfaction in Germany.
- In Britain, the increasing proportions of over-educated workers have had a small downward impact on job satisfaction.
- The decline in job satisfaction between 1984 and 1998 in Germany remains a puzzle.

JEL Classification: J2 J3 J28 C21 C23

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In this paper we consider whether changes in reported job satisfaction reveal changes in the well-being of workers, describe the average level of job satisfaction over time in a number of industrialised countries over recent decades, and pursue an inquiry into potential explanations for declines in job satisfaction in two of the countries for which a decent run of data is available, namely Britain and Germany.

Historically, the concept of job satisfaction has been developed theoretically and empirically within sociology and industrial psychology (e.g. Blauner, 1964; Herzberg et al, 1957) as well as within the field of organisational behaviour (for an overview see Spector, 1997). However, following Hamermesh (1977), Freeman (1979) and Borjas (1979) the concept has become recognised as relevant also to economics. In the face of economists' traditional distrust of subjective and of attitudinal variables, these writers demonstrated the informational content of survey responses on job satisfaction. The variable was related as expected to a number of objective job features, and proved to be a robust predictor of quitting behaviour. Other economists have subsequently investigated a range of issues. Two recent examples are: the puzzle of the missing (or paradoxical) link between trade union membership and job satisfaction (Sloane and Bender, 1998), and the paradoxical relationship between gender and job satisfaction, in which it is found that women tend to report higher levels of job satisfaction despite experiencing apparently worse objective job conditions (Clark, 1997). Most labour economists do not expect to find a simple monotonic relationship between pay and job satisfaction. Rather, it is typically found that satisfaction depends on pay relative to some norm or expectation (Clark and Oswald, 1996; Hamermesh, 2001).

One major issue that has received scant attention to date, however, is that the unveiling of comparable nationally representative survey data in recent years has begun to reveal significant trends in nations' reported job satisfaction (Oswald and Gardner, 2002; Blanchflower and Oswald, 1999). Prior to the 1980s, the available sets (namely, the British General Household Survey -GHS and the United States' General Social Survey - GSS) of continuous consistent series of questions on job satisfaction data showed little or no trend. However, since the mid 1980s the unfolding of successive annual GSS in the U.S. and a selection of new repeat survey series and longitudinal panels, has opened up an empirical picture of the perceived changing quality of work life in a number of countries. As we shall see below, the surveys reveal a story of declining job satisfaction in Britain and Germany and, to a much more modest extent, in the U.S. The existence of these declines has not been widely appreciated.[1]

What gives these trends some considerable significance is, first, the presumption of a coterie of eminent economists that job satisfaction is an empirical proxy for workers' utility, hence also their well-being (examples are: Clark, 1997 and 2001; Blanchflower and Oswald, 1999; Clark and Oswald, 1996; Frey and Stutzer, 2002a and 2002b). However, not all economists writing about job satisfaction share this assumption (Hamermesh, 2001; Levy-Garboua and Montmarquette, 1999). Therefore, to motivate our concern with these trends, in Section 1 we first consider these opposing positions. We side with critics who doubt the validity of treating the level of job satisfaction as a proxy for the level of workers' well-being. Nevertheless, we argue that the trend in job satisfaction is potentially informative about *changes* in workers' well-being.

[1] Jürges (2003) is a rare exception; Hamermesh (2001) studies the changing dispersion of job satisfaction.

Given this conclusion, Section 2 of the paper documents the trends in job satisfaction over the recent medium term for a number of countries. Then, a second question of interest is whether the proximate sources of change can be traced to the underlying characteristics of jobs. For example, any decline in workers' well-being might be regarded as surprising in an affluent economy with rising real wages. The resolution to that paradox might reside in changing aspects of jobs, whose effect on job satisfaction could have outweighed the beneficial effects of rising wages [2]

It is widely appreciated that recent decades have witnessed two related major structural changes in the industrialised economies: the intensification of global competition, including the emergence of significant competitors in manufacturing industries from low-wage economies, and the pervasive diffusion throughout all sectors of computer-based technologies. These processes – accompanied by incremental or radical alterations in work organisation and reinforced by superstructural changes in state policies - are thought to have had important consequences for labour markets and for pay and working conditions.[3] At their door is laid the increasing inequality of pay found to varying degrees in many countries since the late 1970s (Katz and Autor, 1999). Hamermesh (2001) has investigated the impact of the rapidly widening pay inequality on the dispersion of job satisfaction in the US, and the less dramatic effect in Germany. Changing inequality of pay does not have any obvious implications for the mean level of job satisfaction. However, other widespread and systematic changes in the workplace have been suggested to undermine the well-being of the worker and subsequently might be expected to alter the mean. These changes include the rising effort requirements of jobs and linked to that a deterioration of the "work-life balance"; the changing extent of task discretion and other forms of employee involvement; and changing risks associated with jobs. A further major change with implications for job satisfaction is said to be the rising skills of jobs and workers which is a result of the skill-biased technological change and expanding education systems. However, more education has not been found, in itself, to be associated with higher levels of job satisfaction.[4] Yet what may be more significant for understanding declines in job satisfaction may be the extent to which workers' skills do not match the jobs they are in (Borghans and de Grip, 2001). An important finding in industrial psychology is that job dissatisfaction can be generated when workers do not 'fit' the jobs they are in: an idea that applies both to skill levels and to workers' preferred hours of work (Spector, 1997; see also Allen and van der Welden, 2002].

The paper's next objective, then, is to investigate whether the changes in real wages and the hypothesised changes in working conditions can together account for the observed changes in job satisfaction (Section 3). For this reason, suitable data for Germany and Britain are used. Although we find that insecurity and the mismatch of jobs with persons each have the expected negative impact on job satisfaction, these account for only a small part of the observed decline in job satisfaction over the period in these two countries. In respect of changing characteristics of the work itself, however, we obtain mixed findings. One set of findings suggests that, though stress, autonomy and the worker-job match all impact on job satisfaction in the way anticipated, these are not able to account for much of the fall in satisfaction among German workers. Nevertheless, the measurement of the characteristics of

[2] Distinction can also be made between the 'intrinsic' characteristics of the work required in jobs, and those 'extrinsic' characteristics of jobs, like pay and security, that are typically more amenable to rational calculation. Rose (2003), suggesting that the former have received undue emphasis in industrial psychology, aims to retrieve for sociological investigation the importance of extrinsic factors in the determination of job satisfaction.

[3] On either side of the Atlantic, many papers and books have analysed the consequences of these processes of change for the modern workplace. Examples are: Cappelli et al. (1997), Osterman (1999), Cappelli and Rogovsky (1994), Gregory *et al*. (2001), Machin and Van Reenen (1998), Millward et al. (2000), Standing (1999), Freeman (1995), Wood (1998), Haskel and Heden (1995), and Burchell et al (1997).

[4] Although this perhaps surprising finding is still unresolved, a probable explanation is that higher education is associated with greater expectations from a job as well as greater rewards (Oswald and Gardner, 2002)

work is quite limited in the German panel data and virtually absent in the British panel data. Using more detailed and richer data on work characteristics that are available for Britain just for the two years 1992 and 2001 from, respectively, the Employment in Britain survey and the 2001 Skills Survey, we find that the intensification of work, a decline in the opportunity for task discretion, and the increasing mismatch of workers' qualifications to job requirements, together can account for all of the decline in job satisfaction within cohorts despite rising real pay.

Section 4 summarises and concludes with a brief discussion of the implications for further research on trends in worker well-being at the national level.

1. Does Job Satisfaction Measure Worker Wellbeing?

In this section we argue that non-flat, medium-term, trends in job satisfaction are (under the assumption of stable norms) valid indicators of changes in workers' well-being.

To prepare the ground, however, we first describe two opposing positions in recent studies by economists, regarding whether measures of job satisfaction are valid measures of the level of utility and hence well-being. As is well known, utility in economics is both the yardstick of well-being (synonymous with 'welfare') and a predictor of behaviour by the rational agent. For the last century, however, utility has been treated as a latent property of the individual. For economists, it was only considered scientifically legitimate to infer utility from observed behaviour, and statements about well-being that involved interpersonal comparisons were ruled out.

The recent resurgence of interest from economists in findings from psychology about various forms of life satisfaction and happiness has, however, made dents in the armoury of economics. Job satisfaction studies are an instance of this. Several studies have shown that the level of job satisfaction is a reasonably good predictor of voluntary quitting behaviour. A recent example is Clarke (2001). Since theory tells us that a worker quits when his/her utility from quitting exceeds that from staying, it has seemed a small step to infer that job satisfaction data are therefore revealing workers' utility, and a second short step thence to conclude that the data are measuring workers' well-being at work and hence the overall quality of workers' jobs. Apart from Clark (1997 and 2001) other studies that are explicit about identifying job satisfaction levels with utility and well-being include Blanchflower and Oswald (1999), Frey and Stutzer (2003a and 2003b).

Taking these two steps, and assuming that job satisfaction is a proxy for workers' well-being, is nonetheless awkward. Not only is it against the tradition of economics, it also leads labour economists to uncomfortable conclusions about the form of the utility function. Many studies have shown that, treating utility as a monotonic function of wages would be a mis-specification. Job satisfaction has been shown to depend on the discrepancy between pay and some norm, though studies differ on precisely how that norm is generated. This finding leads into the realm of relative income theory, which has a distinguished lineage within economics (Veblen, 1899; Duesenberry, 1948), but which questions many fundamental beliefs –not least the beneficial effects of economic growth on well-being. To accept that job satisfaction data measure utility and well-being (even if with error), one is led to entertain some unusual policy conclusions on wages, such as policies to cap pay differentials, just as exponents of the wider happiness and life-satisfaction approach have been led to propose some quite unconventional policies on economic growth (Layard, 1980; Frey and Stutzer, 2002).

For job satisfaction to be treated as a proxy for utility, though it is a necessary condition that the indicator is a predictor of voluntary quits, this is not a sufficient condition. It is possible that job satisfaction could be determined by worker utility and other factors. If so, job

satisfaction would be a biased predictor of quits if those other factors were also correlated with utility. No adequate case has yet been made either way to assess whether job satisfaction is an empirically valid and reliable proxy for workers' utility as an unbiased predictor of workers' behaviour.

An alternative is to refuse to take the two steps needed towards assuming that job satisfaction is a proxy for well-being. Levy-Garboua and Montmarquette (1999), for example, do not assume that job satisfaction data measure utility. They interpret workers' job satisfaction statements as reporting whether their present well-being exceeded the level which they expected for the present at some previous date. Their conception of job satisfaction as "posterior choice" supposes that the statements are in response to the question: "would you have chosen this job again, knowing what you now know?". The idea is that workers express satisfaction to the extent that their current income, job prospects, and working conditions are at least as good as expected. Hamermesh (2001) adopts a similar approach. One reason for doing so is that he is unwilling to make the assumption of a utility function of the type found in relative income theory (Hamermesh, op. cit: p.3).

In this paper, we do not make the assumption that the *level* of utility (as proxied by job satisfaction) is an adequate measure of the *level* of a worker's well-being. The fact that job satisfaction data help to predict quits does not require us to do so. In our view, such an assumption leads to an implausible depiction of human well-being: it is too obvious from all the studies of job satisfaction and comparison pay that the level of recorded satisfaction is greatly affected by the operative norms. Two individuals with the same array of pay and other job characteristics would then be seen as having different levels of well-being if they have different expectations. More worrying still, the low paid worker who is 'happy' with her lot (because of low expectations) is taken to have as good a job as the high paid worker. Another reason for not equating the level of expressed job satisfaction with the level of worker well-being is that, even if we are just considering the 'affective well-being' of workers, job satisfaction is only a one-dimensional indicator, whereas research suggests that at least two dimensions are needed to capture the full range of emotional responses to jobs (Warr, 1990). The pages of psychological journals continue to explore the dimensions of affective well-being, and to generate new instruments for capturing these dimensions in various settings. Job satisfaction sits within this literature as the traditional instrument with a long history, but no longer on its own, and no longer regarded as capable of summing up the main dimensions of workers' emotional responses to jobs.

Though job satisfaction is, therefore, not in general the same as utility or well-being, nor an unconditional monotonic transformation thereof, the two concepts are related. One fairly general way of depicting the conceptual link between job satisfaction (*JS*) and utility (Z) is:

$$JS_{it} = aZ_{it} + b(Z_{it} - Z^*_{it}) + u_{it} \qquad (1)$$

where Z^*_{it} is the norm of utility that the individual expected to achieve in time t. This formulation encompasses both the position that job satisfaction measures the level of utility (the case where $a = 1, b = 0$) and the opposite extreme where all that the job satisfaction data reveal is the extent to which the expected norm is achieved ($a = 0, b \geq 0$). As long as $b > 0$ it will be incorrect to equate job satisfaction to well-being, even with error. The impact of factors other than well-being on job satisfaction is captured in their effect on the norm. Taking averages within groups, and re-arranging terms, equation (1) may be re-stated as:

$$\overline{Z}_{it} \approx \frac{1}{a+b}\overline{JS}_{it} + \frac{b}{a+b}\overline{Z}^*_{it} \qquad (2)$$

except that the "*i*" now refers to the group, and we have assumed that groups are large enough to render the random error term very small. From this, one can see that comparisons of job satisfaction among groups of workers cannot be used to infer differences in well-being, because groups may have heterogeneous norms. Therein lies, for example, the gender paradox in empirical studies of job satisfaction. The quality of women's jobs is, on certain plausible needs-based criteria, lower on average than the quality of men's jobs, but many studies in a variety of circumstances find women expressing greater average job satisfaction. To most commentators, it has seemed unsafe to conclude from these studies that women's well-being at work is greater than men's. Explanations have been sought, the prime one being that the norms are themselves gendered (Clark, 1997). The general lesson is that job satisfaction comparisons between groups do not reveal unbiased information about well-being comparisons unless accompanied by explicit assumptions about differences in the group norms.

By contrast, inference about utility or well-being is valid for within-group changes of job satisfaction over time, under some quite plausible maintained assumptions. The particular value of job satisfaction data lies, therefore, in its trends. If it can be assumed that the norms against which job satisfaction judgements are made are stable in the medium term, the trend data then convey information about changes in well-being. If job satisfaction is rising (falling) we could conclude that workers' well-being is rising (falling), *conditional on the assumption that their norms are changing little or not at all*.[5] Whether that assumption is valid must depend on the circumstances, which partly depend in turn on the time horizon. Taken over the very long term of many decades the validity of the assumption would be dubious, because even slow-moving norms could build up to substantially changed ones over this period. Over the medium term of a decade or so, however, it may be reasonable to assume comparatively stable norms, so that any shifts in job satisfaction indicate real changes in affective well-being and so that their origins in possible changes in the underlying quality of jobs merit investigation. Taking differences in the terms of equation (2) we have:

$$\Delta\overline{Z}_{it} \approx \frac{1}{a+b}\Delta\overline{JS}_{it} + \frac{b}{a+b}\Delta\overline{Z}^{*}_{it} \qquad (3)$$

If the norm is assumed to be a fixed effect, then one can infer that the sign of the change in well-being is proportional to the change in the observed job satisfaction data. One could alternatively drop the assumption that norms are fixed in the medium term, in favour of weaker assumptions: either (a) that $abs(b\Delta\overline{Z}^{*}_{it}) \ll abs(\Delta\overline{JS}_{it})$; or (b) that the $sign[\Delta\overline{Z}^{*}_{it}] = sign[\Delta\overline{JS}_{it}]$, that is, the change in group norms is in the same direction as the trend in average job satisfaction. In either case, it follows that $\Delta\overline{Z}_{it} \gtreqless 0 \Leftrightarrow \Delta\overline{JS}_{it} \gtreqless 0$. However, even over the medium term of a decade or so, the assumption of stable norms would not be acceptable if there were reasons to expect a sea-change in expectations, perhaps stimulated by media campaigns, and if this change in expectations could be sufficient to generate the observed change in the reported job satisfaction.

As a corollary of our rejection of job satisfaction level comparisons, we consider it to be invalid to infer anything about the comparative well-being of nations' workers from comparisons of the level of job satisfaction across countries. Norms and expectations about work are likely to differ across national cultures. Where non-common languages intervene this adds to the sources of variation in responses to questions. Thus, such comparisons would seem incapable of yielding useful information about the comparative well-being of national

[5] The same assumption could be made using the interpretation of job satisfaction adopted by Levy-Garboua and Montmarquette (1999).

workforces. An interesting example is the study by Sousa-Poza and Sousa-Poza (2000). Aware of cultural influences on job satisfaction responses, they claim to account for some of the cross-country differences. For some (though not all) countries the job satisfaction ranking is explained by subjective measures of work-role inputs and outputs (though no formal tests are presented for this). Yet these measures are also norm-referenced, possibly with the same cultural distinctions. When making such cross-country comparisons at a single time point, it remains hard to escape the 'so what' factor. In contrast, international comparisons of changes in job satisfaction are of potential interest, as long as it is valid to assume that the national-specific norms are reasonably stable over the medium term.

Thus, analyses of *changes* in job satisfaction within controlled population groups, now made much more feasible with the arrival on the social scientists' screen of the repeated survey instruments that were not available to an earlier generation of researchers, have the prospect of yielding seriously interesting findings about *changes* in worker well-being in the modern era. Assuming, finally, that the characteristics of jobs are one of the prime determinants of worker well-being, the trends may also be informative about far-reaching changes in the nature of work in the modern era. In pushing forward this agenda we are, in other words, playing for potentially high stakes.

With that resolution of the key premises underlying this paper, we now proceed to an examination of what is known about the job satisfaction trends in several nations.

2. Changes in Job Satisfaction in Industrialised Nations

2.1 Data

For descriptions of trends in job satisfaction within a number of nations, we draw on the following data sources: the British Household Panel Study-BHPS, the Employment in Britain Survey-EIB, and the 2001 Skills Survey-SS, the European Community Household Panel-ECHP, the General Household Survey-GHS (for the UK), the German Socio-Economic Panel-GSOEP, and the General Social Survey-GSS (for the US). International evidence stems from the International Social Survey Programme-ISSP. Brief descriptions and references are provided in Appendix 2. All survey series used are randomly drawn nationally representative samples, with identical questions asked at different points of time.[6]

2.2 Job Satisfaction Patterns

As portrayed by Figure 1(a), in Britain over 1972 to 1983 there was a small downward trend in average job satisfaction. There is thus if anything some sign of a fall in the level of workers' well-being in Britain over this period; however, the decline is modest, and only becomes significant statistically following the fall shown between 1980 and 1983.

There is a gap in our knowledge of what happened to job satisfaction in Britain over much of the 1980s. Figure 1(b) shows how job satisfaction in Britain changed over a later period, from 1991 to 2001. With the exception of a spike in 1997, job satisfaction slopes downward up to 1999 (5.54 as opposed to 5.34), but the trend is reversed in the early 2000s. Note that in 1997, new panel members were injected and in 1999 there was an influx of Scots and Welsh in the BHPS pool. These procedures affect neither the overall nor the regional trajectory of job satisfaction. The downward trend in the levels of job satisfaction is also confirmed by two independent surveys – see Figure 1(c). Although these surveys were not conducted on an

[6] Representativeness in panels is maintained by regular refreshment of the sample and through following members as they leave home to form new households.

annual basis they both convey the same message: there is a decline in the levels of self-reported job satisfaction for most of the 1990s decade.

Is this picture of falling well-being found in other industrialised countries, or is it a peculiarly British phenomenon? Figure 2(a) shows that British workers are not alone in reporting a deteriorating situation at the workplace. In West Germany, with the exception of a spike in 1992 (and a smaller spike in 1987) average job satisfaction declined steadily from 7.65 in 1984 to a trough of 6.92 in 1997, after which it recovered slightly up till 2000. East Germans immediately after transition initially recorded very substantially lower levels of job satisfaction than West Germans; the gap narrowed within a couple of years, but after 1994 East Germans settled also into a downward movement in job satisfaction in parallel with the rest of Germany. The downward trend in West Germany in the 1990s is also confirmed from a different data source in Figure 2(b). Note, also, that in both sources the average level of job satisfaction is lower in East than in West Germany.

Elsewhere in Europe the picture is less certain, because consistent series of job satisfaction are available only for intervals of up to six years, as derived from the European Community Household Panel. Figures 3(a) and 3(b) show the trends. There are considerable differences in the levels of job satisfaction across nations. Individuals in Austria and Denmark, for example, turn out to record the greatest job satisfaction, while Portugal and Greece show up far down the league. As argued above, such differences reflect a combination of cultural and linguistic factors, as well as possible differences in working conditions.[7] The differences in levels are of less interest than any trends. There appears to be a modest downward movement in the Netherlands over 1994-2000 and in Finland over 1996-2000; yet in neither case is the downward trend significant.[8] Indeed, in none of the remaining European countries is there a significant time trend over this short period.

Figure 4 shows further changes in job satisfaction in Europe, using the ISSP, over 1989 to 1997. There is virtually no change over this period in Italy, re-enforcing the stable nature of job satisfaction recorded for the overlapping later period shown in Figure 3(b). For the Netherlands, however, the change is significantly upwards; taken with the small but insignificant downward movement shown for 1994 to 2000, we cannot be confident about the direction of the trend over the 1987 to 2000 period. In Hungary, job satisfaction significantly increased over this period which, notably, straddled the transition from communism; while in Norway job satisfaction decreased significantly over 1989 to 1997.

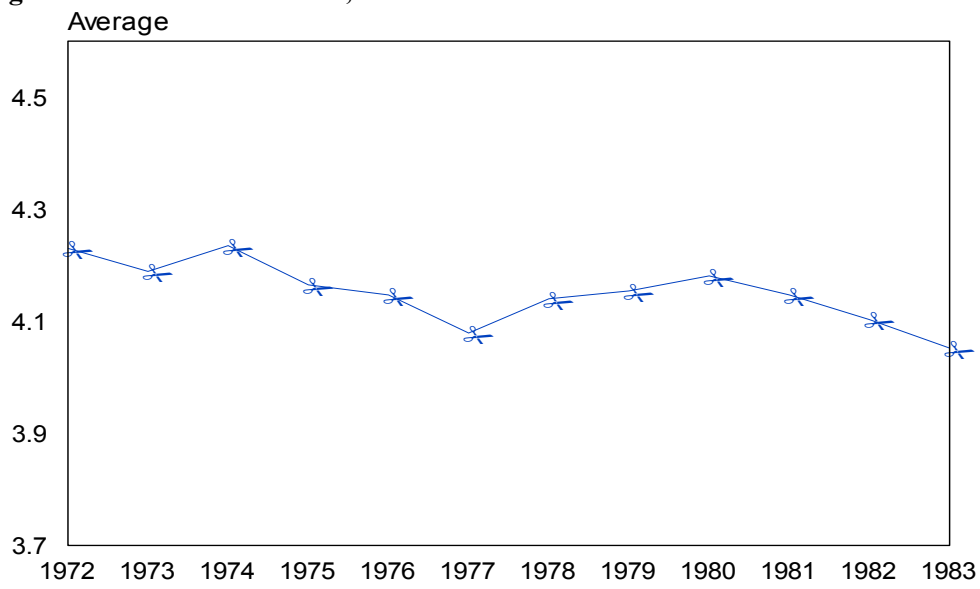
Finally, Figure 5 reports average overall job satisfaction for the US. This is the country for which there is the longest run of randomly-sampled workers. There is little visual evidence of any long-term trend in the average level of job satisfaction. The series is, however, long enough to pick up that there is small downward trend over the whole period. Regressing job satisfaction against time yields an estimated time coefficient of -0.0013, with a p-value of 0.007. Though significantly negative, it implies that even over 100 years job satisfaction would only fall by 0.1 points, not much compared with the possible range of 1 to 4. The picture of stability is confirmed from a separate data source for the 1989 to 1997 period, as shown in Figure 4. This finding of fairly flat job satisfaction levels through time is consistent with the findings of Oswald (1997) as well as Weaver (1980) on earlier US data. Hamermesh (2001) also notes signs of modestly diminishing job satisfaction among young workers in the 1978-1988 and 1984-1996 periods of the NLSY for the US.

[7] Inglehart (1990) argues that linguistic factors may be overstated, following comparisons of French, German and Italian workers with Swiss workers who speak the same language.

[8] We regressed the level of job satisfaction against time, and tested the significance of the time coefficient.

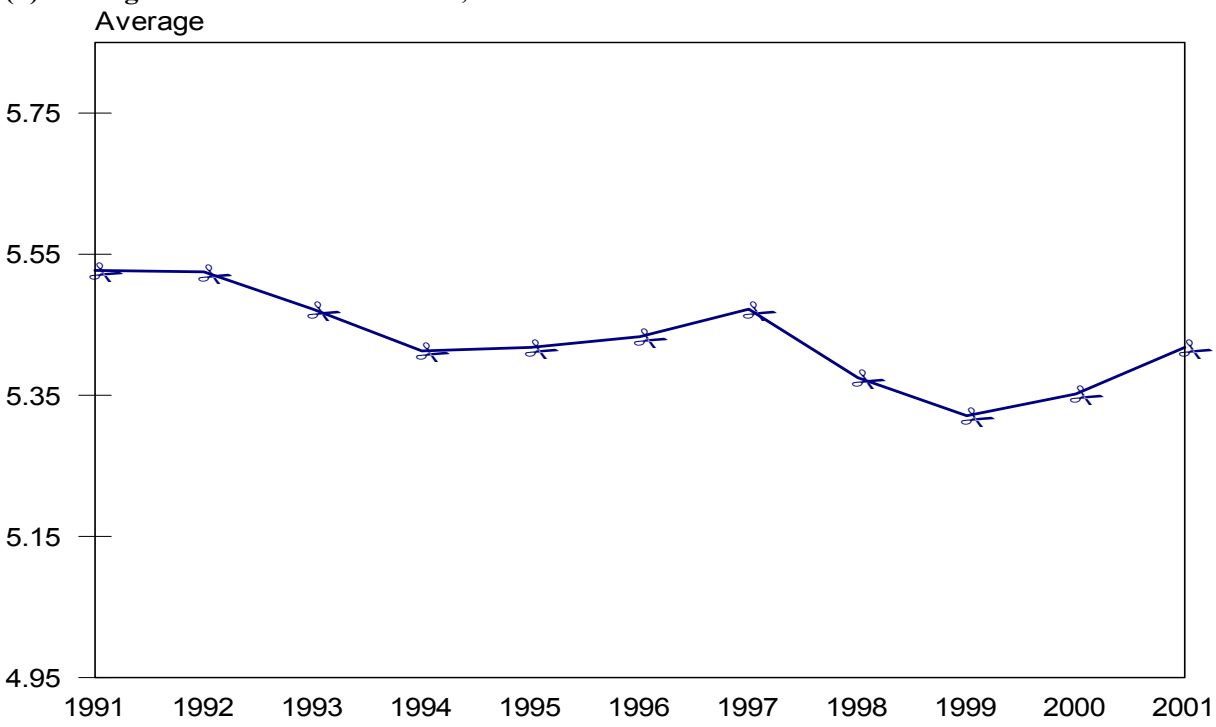
Figure 1. Job Satisfaction in Britain

(a) Average Overall Job Satisfaction, 1972-1983.



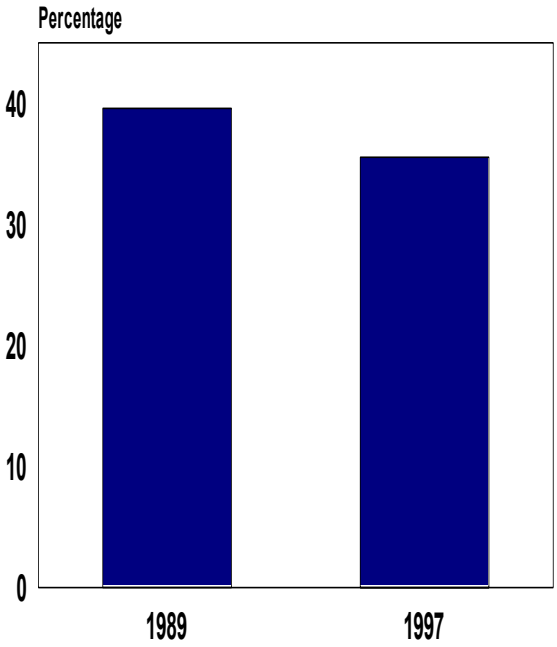
Note: Question: *"Satisfaction with present job"*. Scale runs from 1 ("very dissatisfied") to 5 ("very satisfied").
Source: General Household Survey (GHS).

(b) Average Overall Job Satisfaction, 1991-2001

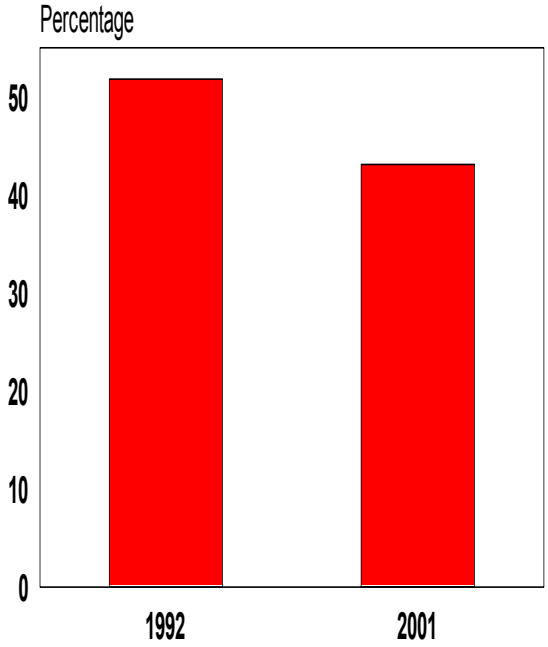


Note: Question: *"All things considered, how satisfied or dissatisfied are you with your present job overall using the same 1-7 scale?"* Scale runs from 1 ("completely dissatisfied") to 7 ("completely satisfied").
Source: British Household Panel Study (BHPS).

(c) Proportion *Completely Satisfied* or *Very Satisfied* with their job



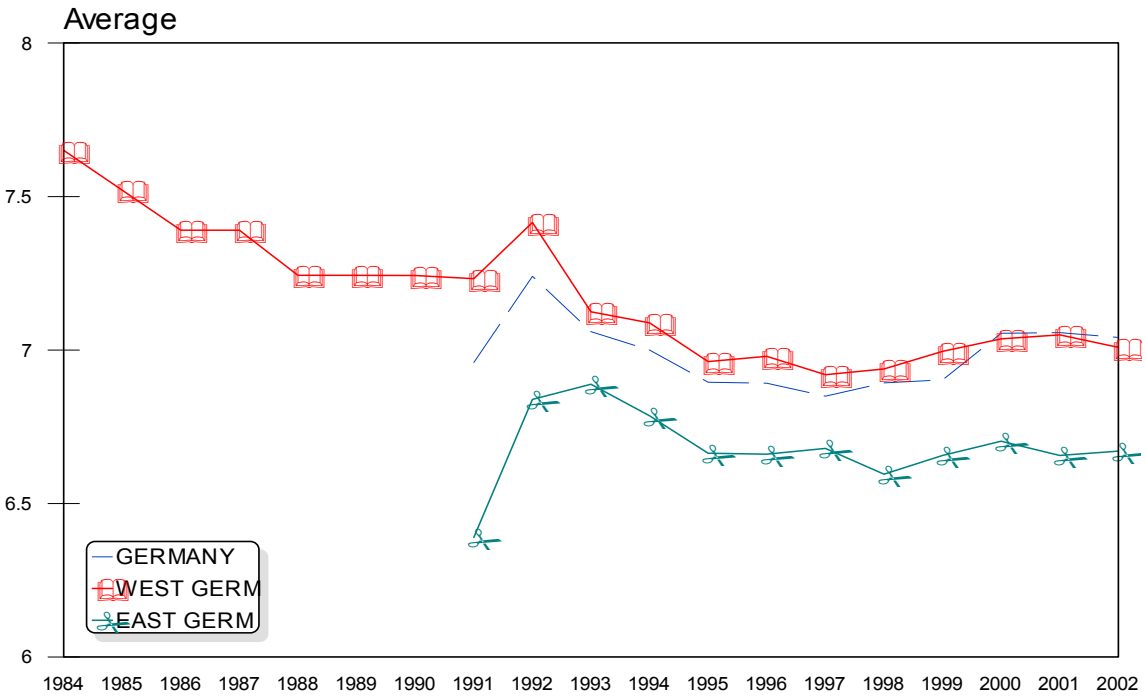
Note: Question: *"How satisfied are you in your job?"*. Scale runs from 1 ("completely dissatisfied") to 7 ("completely satisfied").
Source: ISSP - Work Orientations I & II



Note: Question: *"How satisfied are you in your job?"*. Scale runs from 1 ("completely dissatisfied") to 6 ("completely satisfied").
Source: Employment in Britain (EIB) and 2001 Skills Survey (SS).

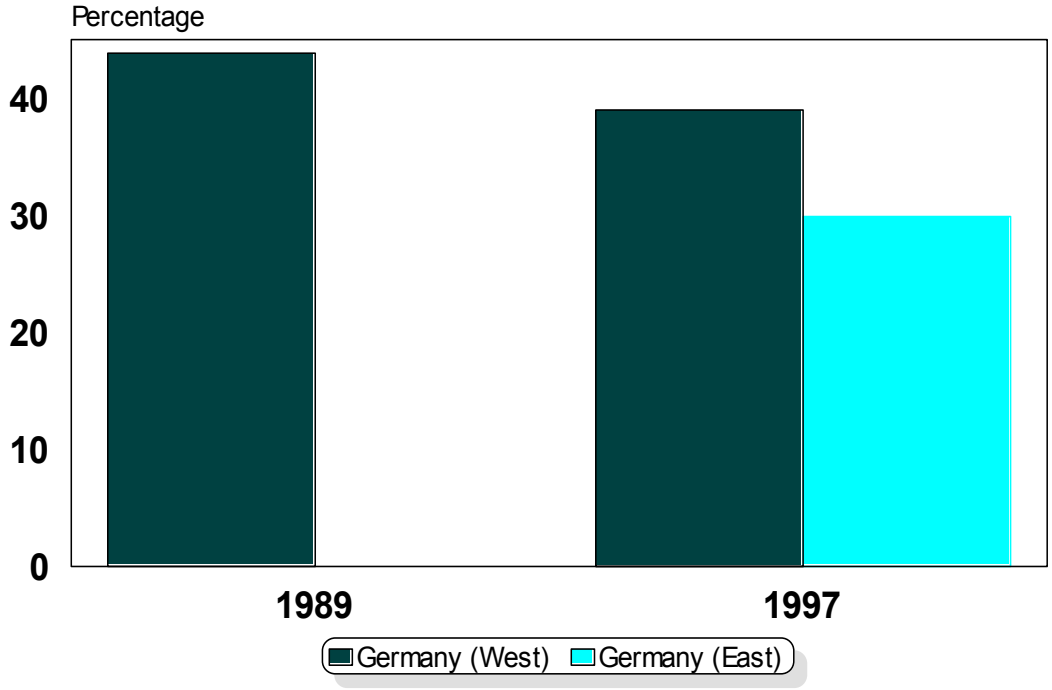
Figure 2. Job Satisfaction in Germany

(a) Average Overall Job Satisfaction, 1984-2002



Note: Question:*" How satisfied are you today with the following areas of your life? Please answer by using the following scale, in which 0 means totally unhappy and 10 means totally happy. If you are partly happy and partly not, select a number in between".* Scale runs from 1 ("completely dissatisfied") to 10 ("completely satisfied").
Source: German Socio-Economic Panel (GSOEP).

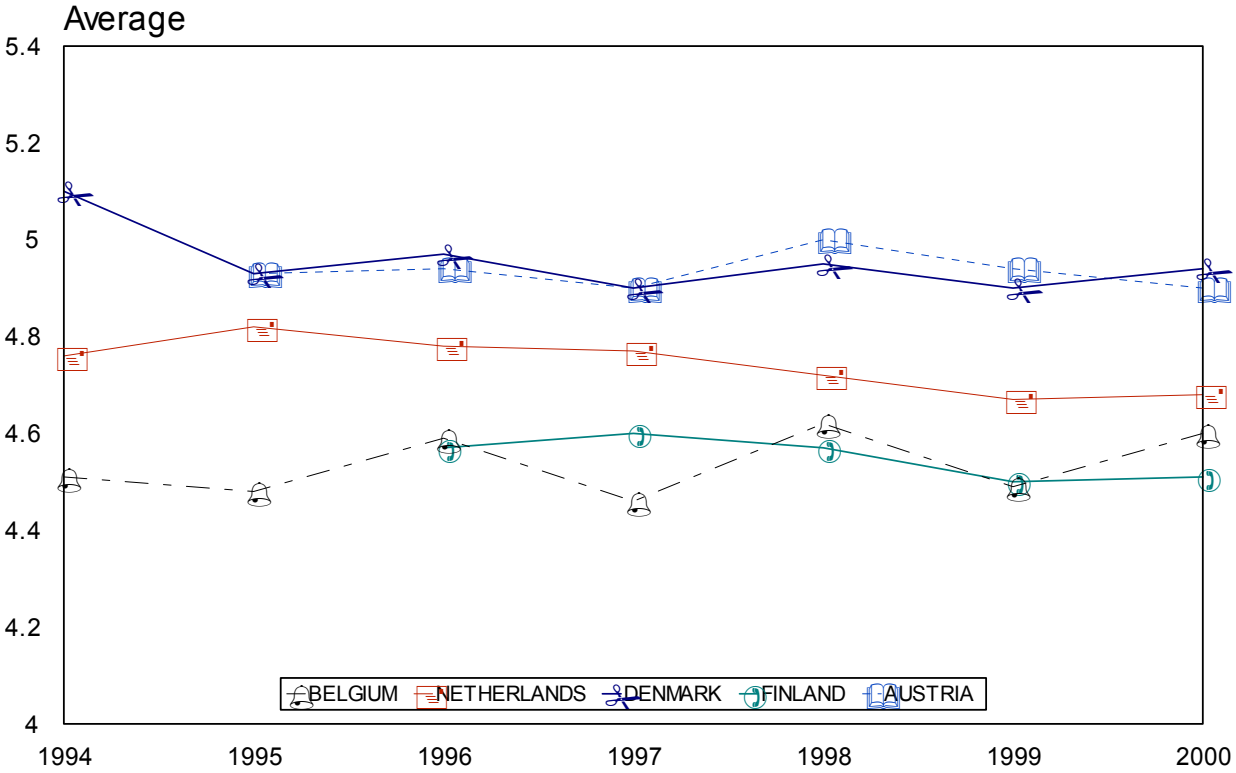
(b) Proportion *Completely Satisfied* or *Very Satisfied* with their job



Note: Question: *"How satisfied are you in your job?"*. Scale runs from 1 ("completely dissatisfied") to 7 ("completely satisfied").
Source: ISSP - Work Orientations I & II.

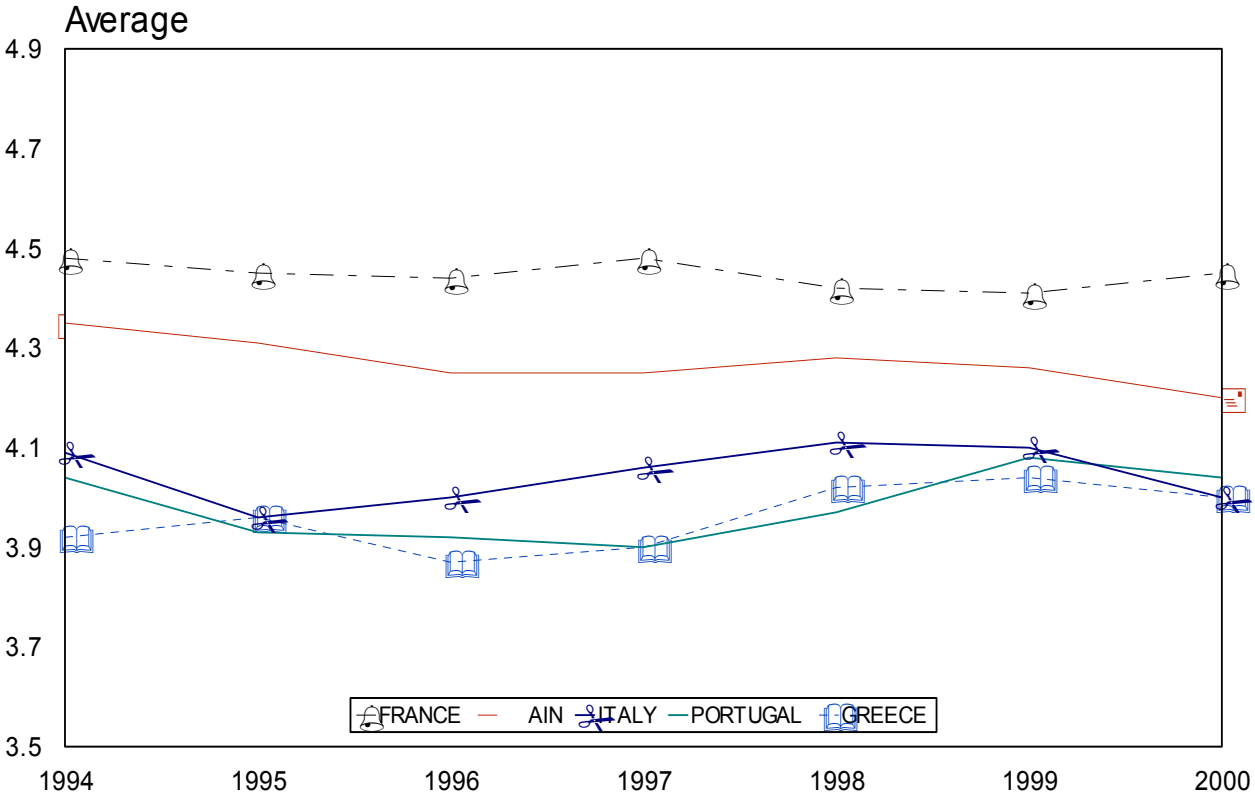
Figure 3. Job Satisfaction elsewhere in Europe

(a) Average Overall Job Satisfaction, 1994 - 2000



Note: Question: "Satisfaction with work or main activity for employees working full-time". Scale runs from 1 ("low satisfaction") to 7 ("high satisfaction")
Source: ECHP UDB, EUROSTAT Version June 2003

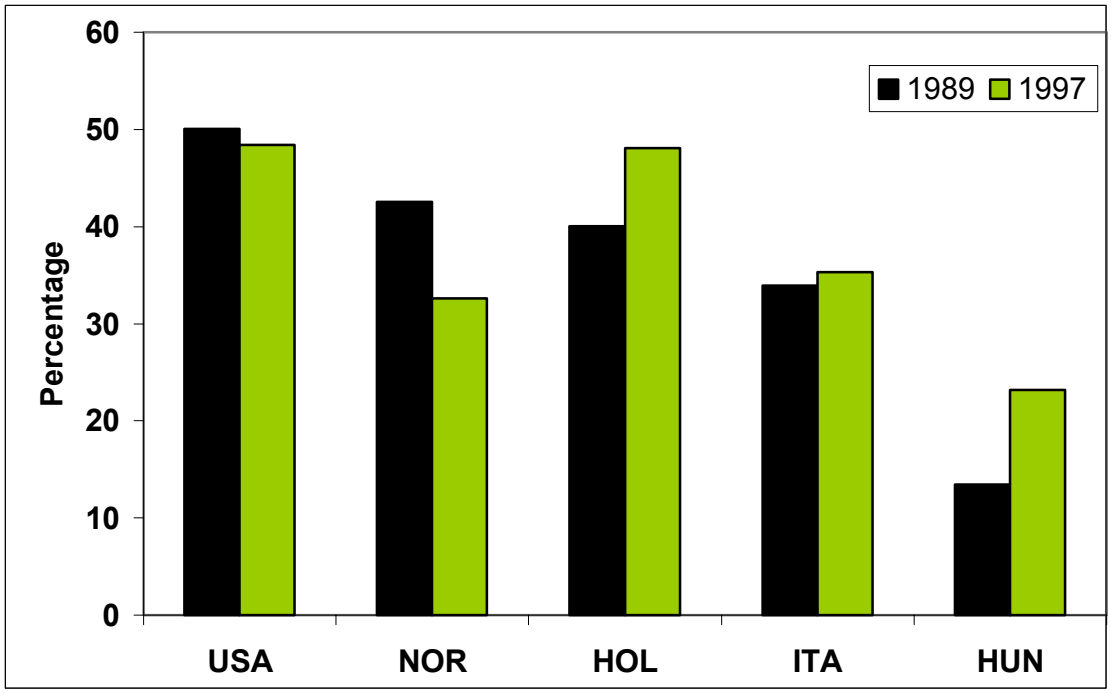
(b) Average Overall Job Satisfaction, 1984- 2000



Note: Question: "Satisfaction with work or main activity for employees working full-time". Scale runs from 1 ("low satisfaction") to 7 ("high satisfaction")
Source: ECHP UDB, EUROSTAT Version June 2003

Figure 4. Job Satisfaction in Five OECD Countries

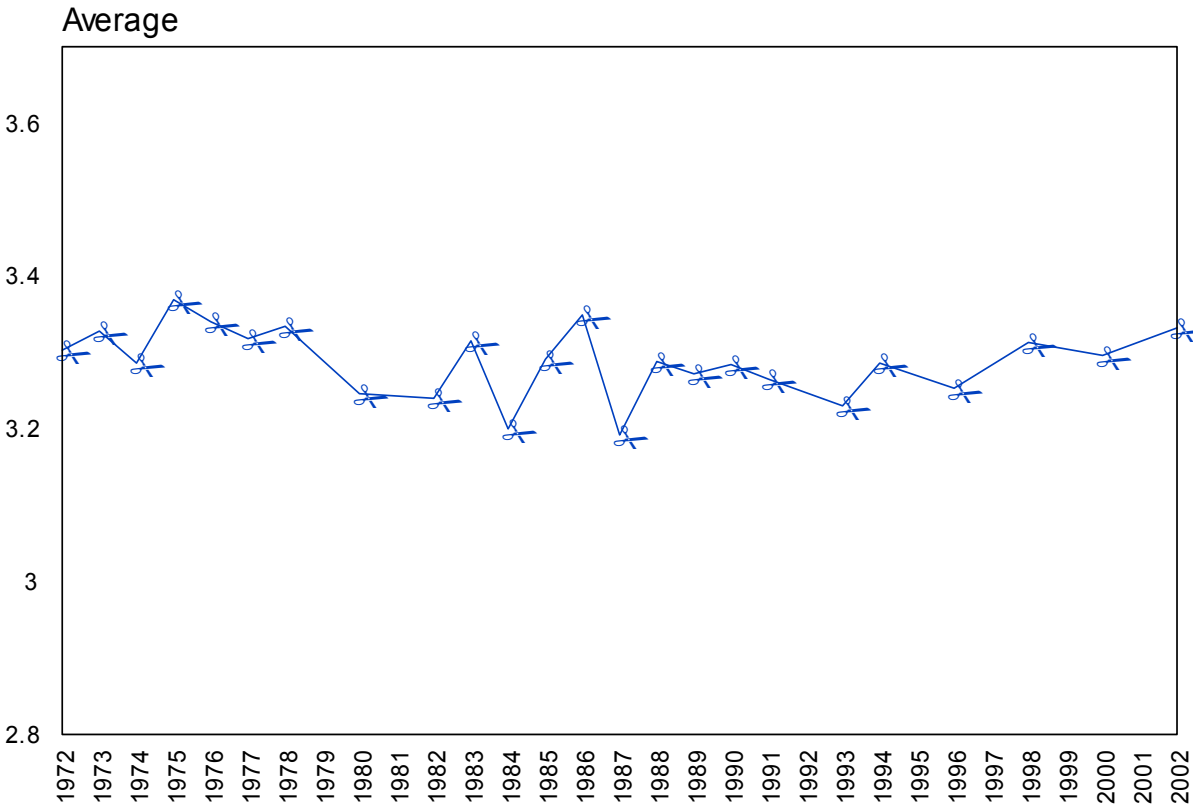
Proportions *Completely Satisfied* or *Very Satisfied* with their job



Note: Question: *"How satisfied are you in your job?"* Scale runs from 1 ("completely dissatisfied") to 7 ("completely satisfied").
Source: ISSP - Work Orientations I & II

Figure 5. Job Satisfaction in the USA

Average Overall Job Satisfaction, 1972-2002



Note: Question: *"How satisfied are you in your job?"*. Scale runs from 1 ("very dissatisfied") to 4 ("very satisfied").
Source: General Social Survey 1972-2002 (GSS)

2.3 Any objections?

Before trying to explain any of the above movements in national levels of job satisfaction, one might ask whether they are genuine. Do the movements represent real changes in worker well-being sentiment, rather than an artificial construction of the data? Do they represent secular trends rather than cyclical movements, or the effects of newer cohorts of workers replacing older ones with potentially different norms.?

Self-reported panel data can have some drawbacks when one wants to analyse long-term trends due to the repeated measurement effect. It is possible that some respondents might overstate their job satisfaction in the first wave of a panel study because the interviewer is a stranger to them. In later waves, as the interviewer and interviewee come closer, this kind of bias might diminish. In fact, some kind of repeated measurement effect can be found in the GSOEP - first-time interviewees are significantly and positively associated with job satisfaction in the West German sample. No such effect is found, however, for either the East German sub-sample or the British sample. Moreover we found, consistent with Jürges (2003) that with the West German sample the inclusion of a dummy variable for first-time interview has no effect on the job satisfaction trajectory.

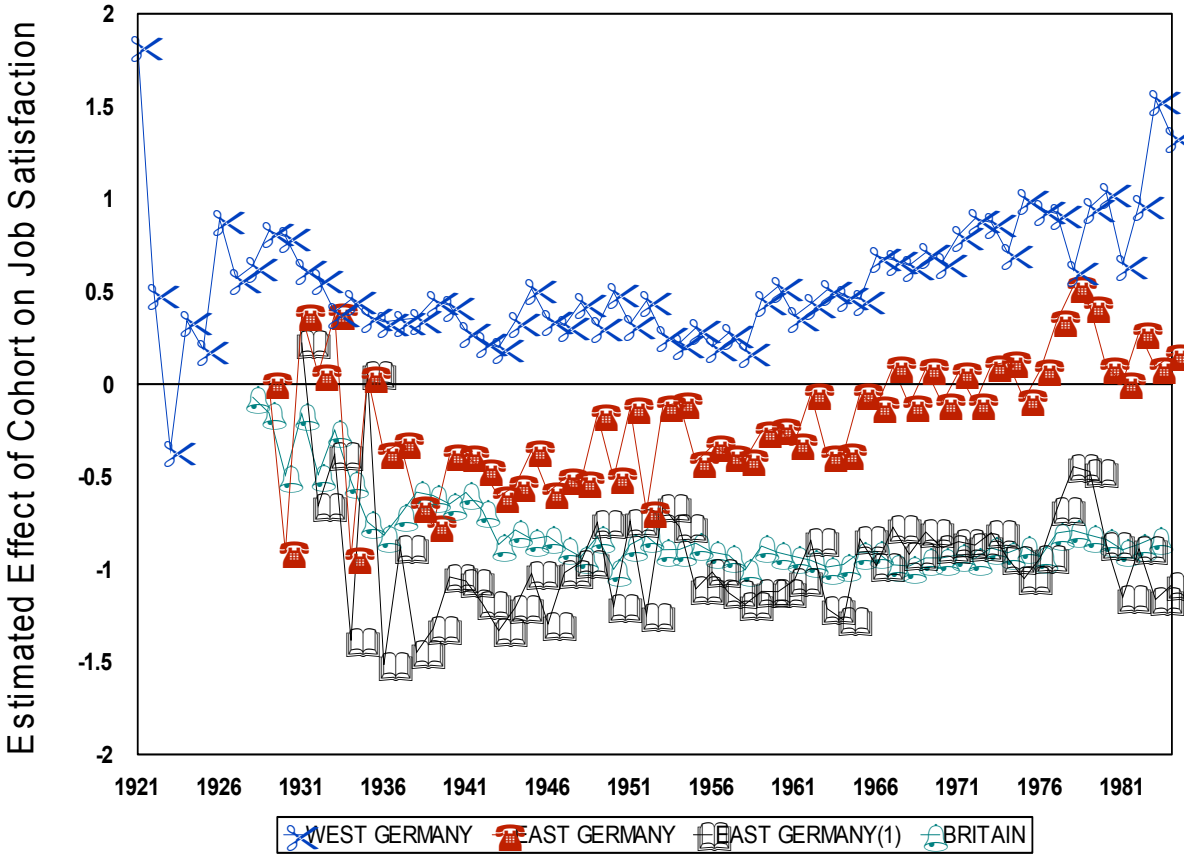
Framing effects are a possible problem with either panels or series of cross-sections. Although, in all the surveys considered above, the precise wording of questions and their response scales are unchanged, it is not always the case that the context of the job satisfaction question within the questionnaire remains unaltered. The GSOEP and the ECHP panels have the advantage that the context remains unchanged during the entire period under examination. In the British panel, it should be noted that the range of specific domains of job satisfaction changed in 1998; yet we doubt that this affected responses to the overall question. However, with the ISSP series, and again with the EIB-Skills Survey series, the contexts of the questions were altered between the two comparison dates. The effects of these framing differences is unknown in either size or direction. Their adequacy as data sources is, however, supported by their consistency with the other data sources in respect of both the trends and the cross-sectional differences.

Declining time trends in aggregate measures of job satisfaction could also be caused by a succession of increasingly dissatisfied cohorts of workers entering the labour force. The question which naturally arises is why different *cohort* of individuals should exhibit different levels of job satisfaction. There is little or no guide among existing studies. Glenn and Weaver (1985) claim hypothetically that the US baby boom generation cohort faced more intense competition in the labour market and so exhibit lower job satisfaction. Whatever the reason, Jürges (2003) does find evidence that, on average, older German cohorts are happier than younger cohorts. He reports that employees born around 1955 seem to be the least satisfied with their jobs, though the precise estimates are sensitive to specification and to identification assumptions. The magnitude of the cohort effect is not, however, great enough under any specification to alter the conclusion about the substantial downward trend in job satisfaction. In Figure 6, we show estimated cohort effects separately for East and West Germany, and for Britain, using the same method as Jürges (2003) [9] Figure 6 shows that the older and the younger West German cohorts are on average happier. The employees born between 1955 and 1960 seem to be the most unhappy cohort. For the East German workers, the employees born in the late 1970s appear to be the happiest cohort whereas the following cohorts seem to be the unhappiest (if we overlook the odd spikes in 1930 and 1934). For the

[9] Following Jürges (2003), cohort effects will be recovered by regressing the individual's specific intercepts (obtained from the fixed equation) on time-invariant variables: year of birth, immigrant status, gender and educational attainment dummies.

British case, the older cohorts turn out to be the most satisfied[10]. Yet the analysis suggests that only a small part of the changes in overall job satisfaction can be attributed to less satisfied cohorts entering the labour market. A large part is down to - yet unexplained - secular changes.

Figure 6. Cohort Effect



Finally, when comparing just two time periods, or only short time spans, there is always a danger of conflating secular with cyclical trends. However, there is little evidence of strong cyclicality in the series on job satisfaction. For example, through the 1972 to 1983 period the British and American economies went through major recessions associated with oil-price shocks; these are not reflected in jumps in Figures 1a and 5. Moreover, multivariate analyses show no robust associations between the job satisfaction and regional unemployment.

[10] Because of the inherent sensitivity of cohort analysis to the model specification, it is easy to find specifications that yield different results. Yet, using the GSOEP and BHPS, the above-shaped cohort effects are robust to the choice of the variables. For example, due to missing values in the East German sample the two bottom lines refer to Spec 5 of the Table 2.2 (East German) whereas East German (1) line refers to a Spec identical to Spec 3 of the Table 2.2. The latter specification is not included under Table 2.2 due to missing values, however, we use it to illustrate the impact of cohort effects in a better way (see also Footnote 20). Our point here is that the cohort effects remain largely the same.

3. Accounting for Changes in Job Satisfaction

In this section we test the hypothesis that the observed changes in job satisfaction noted in the previous section reflect certain major changes in working conditions that have been associated with globalisation and technological change in the recent era. We focus on the changes in those job characteristics which previous micro-level studies have shown to have a significant impact on workers' job satisfaction. In particular, we examine the potential impact of changes in the pattern of working hours and of work effort, a decline in workers' autonomy, a rise in job insecurity and a rise in the prevalence of overeducated workers. All these changes might have counteracted any expected rise in job satisfaction deriving from increased wages. We concentrate on the cases of Britain and West Germany, since relevant data is available in these countries and since both countries intriguingly exhibit significant falls in job satisfaction.

In respect of the hours and effort requirements of jobs, two developments of the recent era have been significant: changes in the extent to which workers' preferences are matched to employers' demands, and the intensification of work effort. First, while there have been no major increases in average weekly hours of workers, there has been an increase in the concentration of hours within households: in both Britain and the US, the weekly hours worked by dual-earner households have substantially risen since the early 1980s (Green, 2001; Jacobs and Gerson, 2001). This trend is part of what underlies the concern of recent years with a worsening 'work-life balance'. While work-life balance has several aspects (Hogarth et al, 2000), in this paper we take the failure to match a person's preference over hours of work with the hours offered by employers as a direct manifestation of a lack of work-life balance (Böheim and Taylor, 2004). Variations in hours worked reflect not only the labour supply decisions of individuals but also employer preferences, which are influenced by technology, industrial relations and the business cycle. Since employment opportunities within firms are normally constrained, and since employers' and employees' preferences can fluctuate, some individuals may need to change jobs in order to attain their desired level of labour supply (Altonji and Paxson, 1992). Job changes, however, are costly and also constrained, so a fraction of workers unwillingly stays in their current job. Workers who wish to reduce their hours of work may be faced with the choice of not changing their hours or stopping work altogether. Incomplete information and/or imperfect mobility between jobs are likely to result in many workers being out of equilibrium with respect to their labour supply at any point in time (Böheim and Taylor, 2003b).The implication of this is that observed working hours cannot be strictly interpreted as revealed preferences and that workers will incline towards those jobs which match their preferences. Failures to match a desire for working hours, because of constrained opportunities and rigidities, are typically seen as the source of work-life balance problems

Recent evidence for Britain suggests that 40% of men and women in paid employment prefer to work a different number of hours at their current wage, and the majority of these prefer to work fewer hours. Stewart and Swaffield (1997) report that more than one third of men in Britain work longer hours than they wish at the prevailing wage. Further, the authors find that the minimum hours constraints set by the firms are an increasing function of the unemployment rate. The authors assume that these results stem from increased job insecurity, fear of redundancy and reduced alternative opportunities. Euwals et al (1998) report similar numbers for the Netherlands. They find that hour preferences have a significant impact on future changes in actual hours among women, but less so among men. Kahn and Lang (1995) and Drolet and Morissette (1997) using Canadian microdata investigate constraints on hours of work using data on reported hours and find considerable divergence from actual hours. In Germany, hours restrictions may have a significant impact on labour supply decisions (Wolf,

1998). Restrictions on working hours have also been found in the U.S. (see, for example, Biddle (1988), Ball (1990), Altonji and Paxson (1988), and Stratford *et al (1995).*

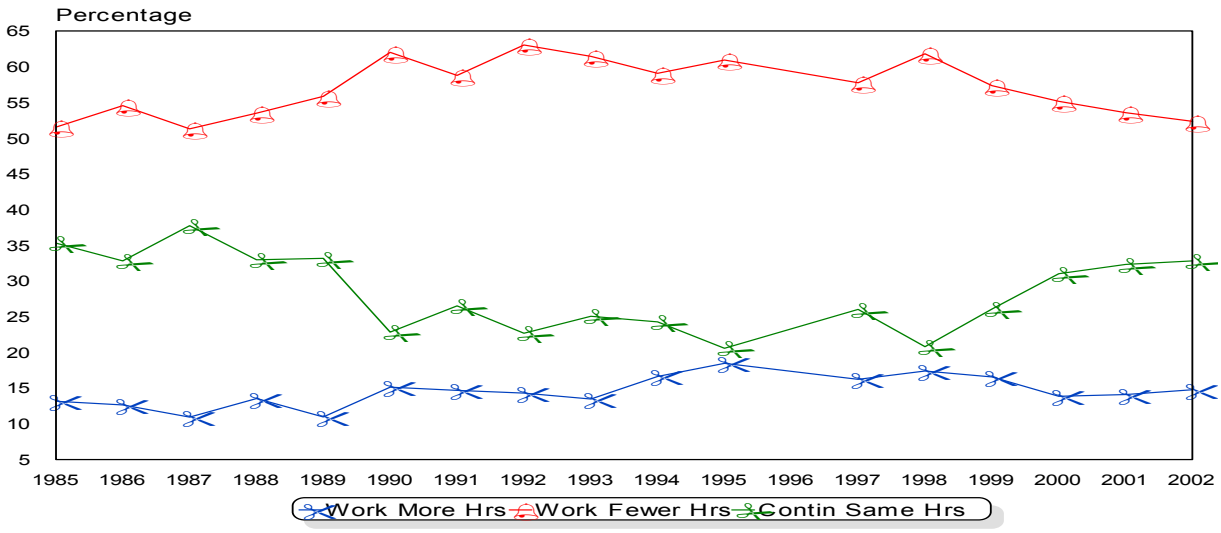
Figures 7 and 8 show the trends in the worker-job match in respect of working hours over the recent era.[11] As can be seen, up till the mid 1990s in both East and West Germany there is a diminishing proportion of workers who express a preference to continue working the same hours. There is an increasing preponderance of workers who wish to work fewer hours, and from a smaller base an increase in the proportion who wish to work more hours. This period of deteriorating worker-job match largely coincides, it may be noted, with the period of declining job satisfaction in Germany (Figure 2). In Britain, by contrast, there is considerable stability in hours preferences. As with Germany, more workers say they want to work fewer hours than say they prefer more hours; but there is only a very modest rise in the proportions wanting to work fewer hours over this period. The worker-job hours match is thus a potential explanation of the trend in worker well-being in Germany, but not in Britain.

The second development of the recent era that may have to contributed to falling well-being is an intensification of work effort during actual work time. In economic terms, the impact of effort on well-being is conceived as the disutility of work. Psychological studies have focused on the detrimental impact of 'work overload', defined in various pragmatic ways. Most, though not all, studies confirm that harder work is associated with lower job satisfaction (Warr, 1987; Spector, 1997). Nevertheless, consistent with several case studies (e.g. Boggis, 2001), systematic comparisons over time of subjective effort intensity measures have confirmed rising levels of intensive work effort in a number of countries during the 1980s and 1990s, including both Britain and Germany (Green and McIntosh, 2001). In Britain effort levels reached a plateau by the latter half of the 1990s (Green, 2001, 2004a, 2004b; Gallie, 2003; Burchell and Fagan, 2002).

Figure 7. GSOEP Preferences for Hours Worked

(a) West Germany

[11] *"Thinking about the hours you work, assuming that you would be paid the same amount per hour would you prefer to... (a) Work fewer hours (b) Work more hours or (c) Continue same hours"*. In Germany, however, the respondents were asked *"If you could choose the extent of your hours at work, taking into account that your earnings would change corresponding to the time: How many hours per week would you like to work."* Having stated their desired hours, we compared their replies with *"how much on average does your actual working week amount to, with possible overtime?"* and derived three dummy variables for preferring fewer, more or the same hours. While this measure of the worker-job match is conceptually similar to the BHPS instrument, the German and British proportions of matched workers are not comparable since the phrasing is different.



(b) East Germany

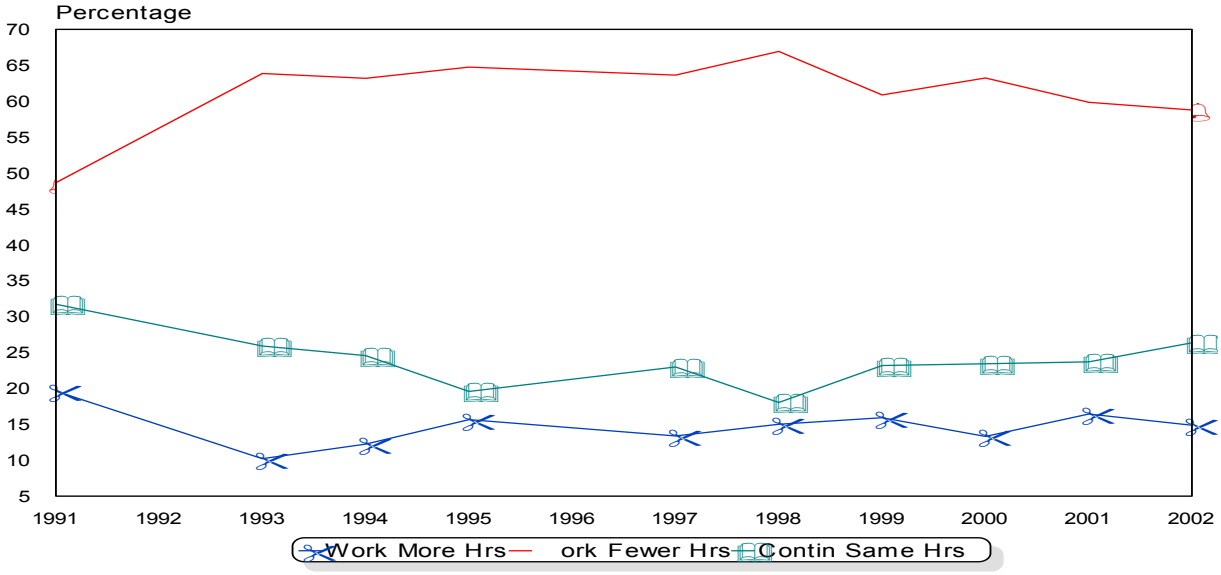
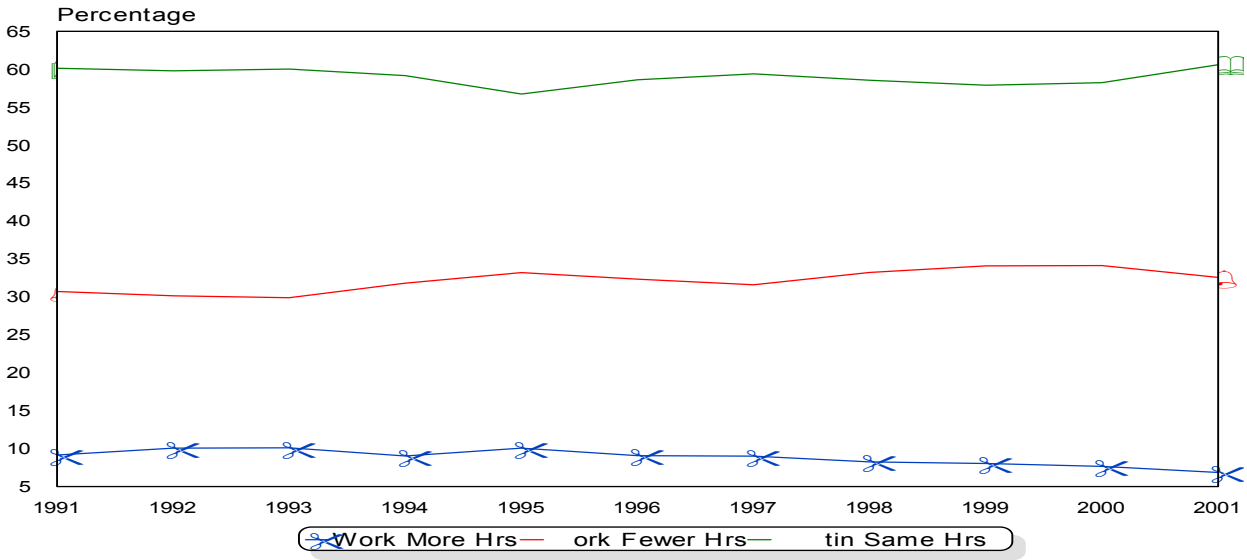


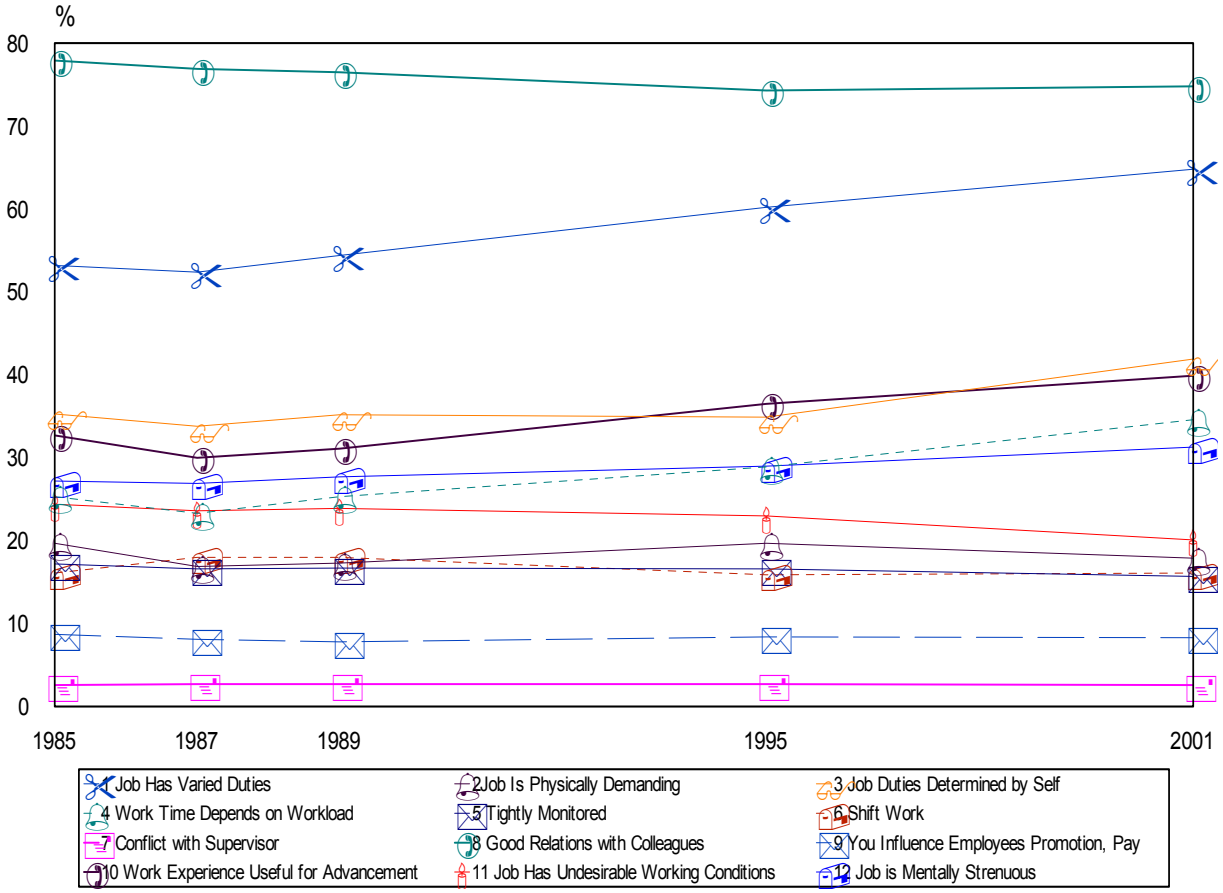
Figure 8. BHPS Preferences for Hours Worked



Unfortunately, working effort is not adequately measured in either the BHPS (which does not measure the intrinsic characteristics of jobs) or the GSOEP. The latter records occasionally whether certain characteristics apply to respondents' jobs. The prevalence of the various job characteristics, shown in Figure 9, is largely stable through the period, but there is a small increase reporting that the job was "mentally strenuous". Unfortunately, this form of words is likely to be far too loose to identify changes in work intensity reliably.

A more adequate set of indicators of work effort is available for Britain in EIB and the 2001 Skills Survey. We used responses to three questions. The first two asked respondents how strongly they agreed or disagreed with the statements (on a 4-point scale): "My job requires that I work very hard", and "I work under a great deal of tension". The third question asked "How often does your work involve working at very high speed?", with responses on a 7-point frequency scale. The standardised scale responses were combined in a factor analysis, which extracted one factor using the principal factor method. The score on this factor was then treated as our Work Effort Index. The mean Work Effort Index using this method increased significantly from -0.160 in 1992 to +0.097 in 2001. This increase reflects increases in each of its components, and is a reconfirmation of the process of work intensification that took place in Britain during the 1990s. Disaggregated and detailed analyses of this change is presented in Green (2001, 2004b): though the extent of work intensification varies to some extent across sectors, it is found in all industries and occupations. [12]

Figure 9. Fully Applied Job Characteristics (F/T Empl.)



[12] The validity and reliability of these instruments have been checked in various ways in the cited references. One source of confirmation is that the Work Effort Index attracts a wage premium as predicted by compensating differentials theory. When added to a simple earnings function with a quadratic in schooling and work experience, and controlling for gender, the index attracted a coefficient of 0.057 (0.011) in the EIB sample, and 0.054 (0.012) in the 2001 Skills Survey (standard errors in brackets).

The effect on job satisfaction of employee involvement is also well established from the psychology literature of the 1960s onwards which led to the advocacy of 'job enrichment' schemes and, in latter years, to the call for employee involvement policies to promote more organisational commitment (Walton, 1985). However, to determine the significance of this relationship for job satisfaction it is essential to distinguish the different forms of employee involvement, because research has shown that these may be changing in opposite directions (Gallie et al, 2002) or may be influenced by management style and culture. In Britain, there is some evidence of a modest rise in the possibility to participate in decision-making, for example, through being consulted in general meetings or through works committees (Millward et al., 2000).[13] With our evidence a similar story is found. We defined an index called "Participation" equal to zero if no participation took place, and one, two or three according as the employee reported *"a little", "quite a lot"* or *"a great deal"* of say or chance to influence any decisions made at the place of work that changed the way the job is done. The proportions participating "quite a lot" or "a great deal" were 32% in 1992 and 36% in 2001.

Measures of the workers' personal influence and control over their work tasks have been showing a distinct decline since the 1980s. We defined the "Task Discretion Index" as the simple average score of the scaled responses to four questions regarding influence over what tasks are done, how they are done, how hard to work at those tasks, and the quality standards to which they are performed. The mean score on this index declined from 2.43 to 2.34 (roughly one third of its standard deviation) between 1992 and 2001. This is a substantial and significant decline, whose origins are not all that clear (Gallie et al, 2002). In Finland, by contrast, task discretion has risen slightly over the period (Lehto and Sutela, 1999). Further information about trends in task discretion in other countries is distinctly limited. The closest GSOEP gets to enquiring about the workers' task discretion is through the question: *"Do you determine the way your work is done";* but with just this one vague question, and only a 3-point reply scale, this is insufficient to capture much information about the various manifestations of task discretion, and fails to distinguish between individuals' discretion about their own jobs and their ability to affect organisation-level decision-making which affects their jobs.

Thus, despite the demonstrated importance of this variable for explaining job satisfaction, it is only for the case of Britain that we can frame an unambiguous hypothesis that the declining scope for personal discretion over work tasks exerted downward pressure on job satisfaction. The modest rise in scope for participation in decision-making, however, would be expected to have had the opposite effect.

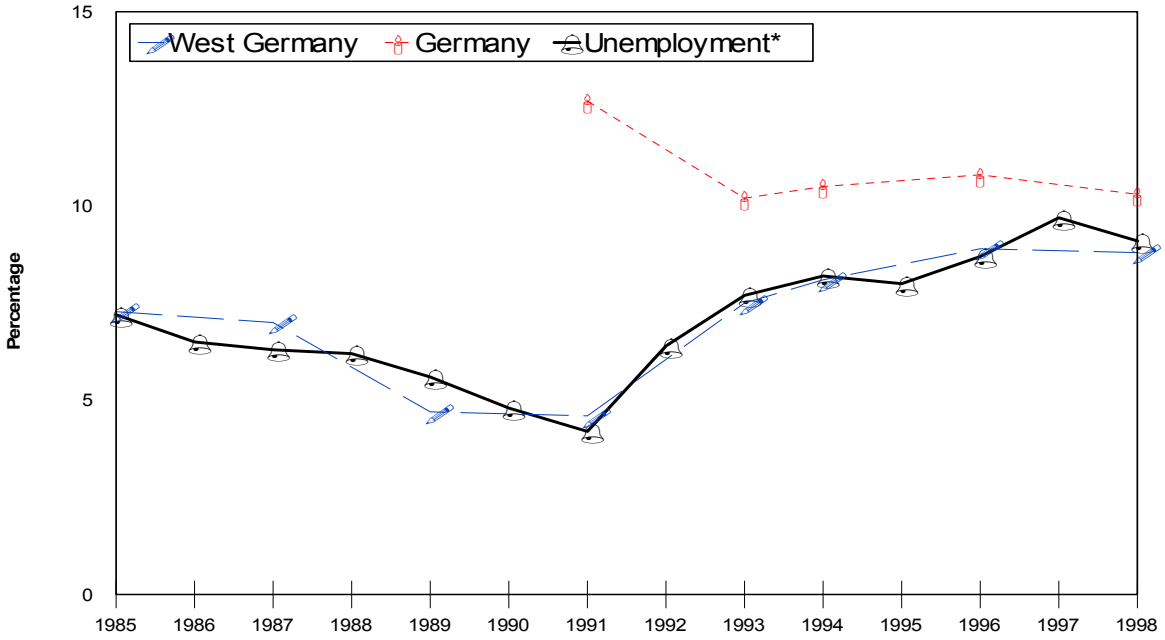
Considerable emphasis has also been placed on putative changes of a third major determinant of job satisfaction, job security. The significance of the claim has been boosted by a substantial bank of research studies showing the detrimental effects of job insecurity on workers' well-being – even extending to impacts on other household members for insecure workers (Burchell, 1994; Wichert, 2002; Westman *et al*, 2001). Increases in the perceived risk of losing one's job, coupled with rising fears of the financial and psychic consequences, could if substantiated therefore be responsible for downward pressures on job satisfaction among those affected. Subsequent research has, however, cast doubt, not on the impact of insecurity where it exists, but on whether insecurity has in fact become more prevalent in modern industrial economies. Careful examination of job duration data in a number of countries has revealed no major trend towards greater instability of jobs (Auer and Cazes, 2003 is a recent comprehensive overview). Subjective fears of losing one's job for the most part track the economic cycle. With relatively low unemployment in Britain by 2001, for example, fears of

[13] This rise is set against the decline in union representation in Britain.

job loss had fallen compared to a decade earlier (Green, 2002). Nevertheless, there was a period during the middle of the 1990s in Britain when workers' fears of unemployment were higher than might have been anticipated given the level of aggregate unemployment. This excess insecurity appeared at a time when media concern with insecurity was at its highest, possibly reflecting the historically poor security situation that professional workers and those in the financial sector were facing (Green et al, 2000). A similar pattern of mid-1990s concern with above average insecurity can be found in the US (Schmidt, 1999), though Blanchflower and Oswald (1999) found no evidence that job insecurity explained the slight downward trend in job satisfaction in the United States. In Britain there has also been a modest rise during the 1990s in the proportion of workers on temporary job contracts, and over the longer term since the 1970s in some of the potential costs of job loss (Nickell *et al*, 2002). In Germany perceptions of insecurity rose significantly between 1989 and 1997 (Green et al, 2001).

Unfortunately, there are no adequate data series for perceived job insecurity within the British data being used in this paper. In the GSOEP, however, individuals were asked: *"What is the chance of losing your job in the next two years?"* Respondents were then asked to classify their job security level on four-point scale: *"1. Definitely Yes, 2. Probable, 3. Improbable and 4. Definitely Not"*. Figure 10, which displays the responses over the years, shows that the perceived job insecurity among German workers increased considerably during the 1990s. The proportion of workers who report that a job loss is definite or probable more than doubled between 1989 and 1998.[14] As can be seen, perceptions of job insecurity follow, in direction, the movement in the national unemployment rate. Given the predicted influence of insecurity perceptions on job satisfaction, the rise in insecurity in West Germany stands also as a possible source of that part of the slump in job satisfaction that occurred during the 1990s.

Figure 10. Chance Of Losing The Job (Definitely/Probably)



Note: Job security data are weighted.
Standardised unemployment rates as % of civilian workforce. *Source*: OECD (prior to 1993 data refers to Western Germany).

The impact on job satisfaction of the fit between the job and the worker has already been noted, through the role of preferences over work-hours. Another potential manifestation of the same relationship is the negative impact of a poor match of a person's educational

[14] The question scale changed after 1998, rendering comparisons with most recent years impossible.

qualifications to the requirements of the job. Allen and van der Welden (2001), for example, have noted the association of over-education with job satisfaction; see also Green and McIntosh (2003). The relevance of this association arises because of increasing concern and possibly also an increasing prevalence of over-education in many European labour markets as more highly educated cohorts enter the labour force. In Britain, for example, it has been shown that the proportion of over-educated workers rose from around 31.0% of workers in 1992, to 37.0% in 2001 (Felstead *et al*, 2002). Much of the increase was due to rapidly rising supplies of workers with middle-level qualifications, but only slowly rising demand for workers qualified to this level.[15] Over the same period, there was also a minor increase from 16.5% to 17.6% in the proportion of workers who were under-educated. There was thus a significant decrease in the proportion of British workers whose qualification levels were matched to the levels required by their jobs. These changes are therefore also potential contributors to declining job satisfaction.

3.1 Specification

We assume that utility Z_{it} is determined by a set of personal and job characteristics, X_{it}. We also follow previous studies and allow for well-being to be affected both by pay and by some pay norm. Thus:

$$Z_{it} = \alpha X_{it} + \beta w_{it} + \chi w_{it}^{*} + \sum_{\tau} \delta_{\tau} D_{\tau} + v_{it} \tag{4}$$

where X_{it} is a vector of relevant job characteristics, w_{it} is the log of the real wage and w_{it}^{*} is the wage norm also in logs. The coefficients on the time dummies D_{τ} capture changes in well-being over time that are not picked up by the observed explanatory variables.[16] Other unobserved individual-specific and time-varying factors (v_{it}) are assumed to be randomly distributed. It is also assumed that v_{it} are i.i.d. with mean zero and variance $\sigma_v^{\,2}$.
Substituting (4) into (1) yields:

$$JS_{it} = \alpha(a+b)X_{it} + \beta(a+b)w_{it} + \chi(a+b)w_{it}^{*}) + (a+b)\sum_{\tau} \delta_{\tau} D_{\tau} - bZ_{it}^{*} + u_{it} + v_{it} \tag{5}$$

It remains to specify how the norm Z_{it}^{*} is determined. A conception consistent with the psychological literature notes that an individual's norm will be conditioned by his/her expected wage, by the individual's own personality, and by the group to which the individual feels attached. A simple specification therefore is:

$$Z_{it}^{*} = cw_{it}^{*} + p_i + g_i^{*} \tag{6}$$

where p_i is a normalised personality index, assumed time-invariant, and g_i^{*} is an index of the group norm effect. In most, though not all, studies p_i is not measured.[17] The expected wage is a function of observed human capital and other factors not observed by researchers, including unobserved skills. Hence we write:

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[15] See also Buchel *et al* (1999); Borghans and de Grip (1999); Green *et al* (2001).
[16] Jürges (2003) also considers that cohort membership could be a factor affecting job satisfaction. However, without further assumptions, one cannot identify cohort effects separately from year effects if one also controls for age.
[17] One could equally conceive of personality factors systematically entering the job satisfaction equation (5) directly; this would not significantly alter the final specification to be estimated.

$$w_{it}^{*} = \hat{w}_{it} + \mu_i \quad (7)$$

where $\hat{w}_{it}$ is the predicted wage from a human capital earnings function, and μ_i is a measure of the labour market value of unobserved skills. Substituting (7) and (6) into (5) yields:

$$JS_{it} = \alpha' X_{it} + \beta' w_{it} + \varphi \hat{w}_{it} + \sum_{\tau} \delta'_{\tau} D_{\tau} + \eta_i + u_{it} + v_{it} \quad (8)$$

where $\alpha' = \alpha(a+b)$, $\beta' = \beta(a+b)$, $\delta' = \delta(a+b)$ and $\varphi = \{\chi(a+b) - bc\}$. Lastly, $\eta_i = \{\chi\mu_i(a+b) - b(p_i + g_i^{*})\}$ is an unobserved fixed effect.[18] If we were to estimate (8) by ordinary least squares, using just the observed variables and treating η_i incorrectly as random error, this would give biased estimates if the η_i are correlated with wages, expected wages, or other job characteristics. A fixed effect panel estimator will, however, be unbiased.

The key to understanding any trend in job satisfaction lies in the estimates of the time dummy coefficients, δ'_{τ}. To the extent that these estimates are decreasing or increasing over time, these coefficients represent the changes that are unexplained by the movements in the explanatory variables. Our investigation strategy is therefore to attempt to account for the changes by including variables in *X* that affect job satisfaction in the predicted way and which by their inclusion lower the absolute value of the time dummy coefficients.

4. Empirical Findings

In this section we consider whether changes in the worker-job match in respect of working hours preferences or of educational qualifications, changes in job security, or changes in the characteristics of work (including effort requirements and autonomy) can account, in a statistical sense, for any or all of the decline in job satisfaction in Germany and in Britain.

4.1 The worker-job match for hours of work

We first investigate whether changes in workers' inability to match their preferred hours to the jobs they hold – an important indicator of work-life balance – could account for the observed declines in job satisfaction in both Britain and Germany. The findings are shown in Table 2.1 for Germany and Table 2.2 for Britain.[19]

Spec. 1 for Britain and West Germany and Spec. 4 in Table 2.1 for East Germany show benchmark specifications which include just year dummies. As can be seen the pattern of the

[18] A conceivable problem of this specification is that p_i, g_i^{*} and μ_i might all, contrary to our maintained assumptions, be time-varying. For example, while individuals rarely change sex or personality, they may gain unobserved skills, and might change industry or location, which might mean that their norms changed. To some extent one can hope that such changes are picked up in the analysis through the inclusion of control variables in the equations for job satisfaction and for the predicted wage.

[19] All the results shown are fixed effects panel estimates; random effects models were rejected in all cases by the Hausman test. Moreover, in all specifications the proportion of the variance that is explained by the panel-variance component, η_i (Equation 8), which captures time invariant unobserved differences between individuals, is relatively large and significantly different from zero. The unobserved individual specific effect is important, and accounts approximately for 50% of the total variance. This underlines the importance of using panel data in studying job satisfaction.

year dummy coefficient estimates reflects the movements shown in Figures 1 (b) and 2 (a) – an overall downward trend over the period, but with job satisfaction bottoming out in 1999 in Britain and in 1998 in West Germany, and subsequently rising a little. In East Germany, job satisfaction jumps in the two years immediately after transition, but then trends downwards as in the rest of Germany.

In Specs. 2 and 3 (British and West German sample) and 5 (East German sample)[20], we introduce the hours preferences variables. We also control for hours, as there is an obvious possibility that actual working hours could be correlated with both satisfaction and with hours preferences. As can be seen, a worker-job mismatch on working hours has a large, negative and statistically significant impact on job satisfaction in Britain and both parts of Germany. In Britain and in West Germany, working too many hours has more of a downward pull on job satisfaction than working too few hours, while the converse is true for East Germany (Spec 5).

Inspection of the year dummy coefficients reveals that there are no significant differences between Specs 1 and 2 for either Germany or Britain. Thus, despite the deteriorating worker-job match on working hours in Germany, this decline does not account for any significant portion of the decline in job satisfaction in that country. We thus conclude that declining job satisfaction is not associated with a deteriorating ability of workers to match their hours preferences with jobs. To the limited extent of the definitions used in this paper, then, it would seem that a deteriorating work-life balance is unlikely to be a substantial cause of declining satisfaction.

Before proceeding with the investigation of other hypotheses, a few comments about the influence of other control variables on satisfaction will be useful. Do these conform to expectations? Specifications with all control variables typically seen as job satisfaction determinants are shown in Spec 3.

Consider first the effect of wages on job satisfaction. It has now become standard for some form of comparison income to be seen as a determinant of job satisfaction. Examples are Easterlin (1974, 1995), Hirsch (1976), Scitovsky (1976), Frank (1985), Rees (1993). Clark and Oswald (1996), Watson et al (1996), Sloane and Williams (2000), and the role of comparison income is associated with the workers' presumed valuation of "fairness" (see, for example, Guth *et al.*, 1982; Smith, 1994).[21] Our equation (8) calls for the inclusion of both the wage and also the wage norm (as computed from a human capital model[22]). The estimates in Specs 3 show that wages are positively associated with job satisfaction, in line with expectations, though in line with previous literature the magnitude of the link is quite modest. The wage norm enters negatively which is consistent, in principle, with the predictions of the theory, but the coefficient is statistically insignificant. However, it should be noted that much of the expected negative association is an individual fixed effect, such as from the effect of education on wage expectations which does not vary over time. Time variation in the wage norm comes only from increased age or job tenure or from the occasional industry, occupation or region switch. Therefore it is not surprising that in a panel fixed effects estimation the coefficients are not well determined.

[20] The sample size in Specification 6 (the East German equivalent to West German Spec. 3) is relatively small owing to a large number of missing values. Nevertheless, a specification with all control variables included, was also run. However, there are many missing values for the earlier years on a number of the main determinants of job satisfaction; the analysis is therefore only possible from 1997 onwards, which provides too short a trend to attempt to explain

[21] Fairness suggests that individuals will throw away real income to obtain a fairer division of a smaller pie. It seems likely that decisions about fairness rest on some sort of comparative process, but the details are not well understood (Clark and Oswald, 1996). Hence, procedural justice in pay policies might be more important than salary differences.

[22] In particular we regress real hourly wages on a constant, age, age squared, job tenure, educational attainment, industrial, occupational and regional dummies.

As also with earlier literature, there is no linear relationship between hours worked and job satisfaction in Britain or in either part of Germany. In Britain, those working between 35 and 40 hours a week express the least satisfaction; in West Germany, satisfaction is notably high for those working between 51 and 60 hours. The association of job satisfaction with age is also non-linear with the highest levels of satisfaction being for 35-39 year-olds in West Germany and for 30-34 year-olds in Britain; but these relationships are not very precisely determined.[23]

Of particular interest is the impact of having temporary a job contract on job satisfaction levels. The impact is large and negative in Britain and Germany. These findings are most straigthforwardly explained as the negative effect of job insecurity, which is well documented in the literature. Though many workers in permanent-contract jobs are also insecure, being in a temporary contract makes it much more likely that the individual will face unemployment in the near future. Also noticeable is a positive association between working in the public sector and job satisfaction – this could be related to the nature of the work, or the particular dispositions of public sector workers, but it may again be a reflection of the greater job security that public sector workers traditionally enjoy. Finally, self-employed workers express greater satisfaction in West Germany but, surprisingly, not so in Britain.[24]

Taken as a whole, these control variables have plausible and predicted associations with job satisfaction. However, their inclusion does not significantly affect the year dummy coefficients. Thus, the above variables and compositional changes along industrial, occupational or regional dimensions are not able to account for the decline in job satisfaction.

[23] See Jürges (2003) for a discussion of how the age effect is linked to heterogeneity between cohorts.
[24] Other control variables, as suggested by the literature, are included to capture unspecified features of jobs not otherwise observed; they merit no special discussion here.

Table 2 **The Impact of Mismatched Time Preferences on Job Satisfaction**

TABLE 2.1	BRITAIN					
	Spec 1		Spec 2		Spec 3	
	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat
Constant	5.517	278.98	5.695	186.26	5.775	28.14
YEAR DUMMIES (†)						
1993	-0.098	-3.68	-0.096	-3.66	-0.111	-4.03
1994	-0.168	-6.29	-0.155	-5.86	-0.169	-5.82
1995	-0.174	-6.51	-0.155	-5.83	-0.167	-5.33
1996	-0.148	-5.54	-0.131	-4.97	-0.148	-4.33
1997	-0.105	-3.96	-0.089	-3.37	-0.104	-2.76
1998	-0.192	-7.54	-0.165	-6.54	-0.181	-4.45
1999	-0.255	-10.24	-0.223	-9.03	-0.245	-5.51
2000	-0.237	-9.50	-0.201	-8.07	-0.224	-4.60
2001	-0.200	-7.94	-0.161	-6.41	-0.188	-3.48
HOURS (‡)						
21 < Hrs < 34			-0.086	-2.99	-0.066	-2.25
35 < Hrs < 40			-0.116	-4.06	-0.096	-3.20
41 < Hrs < 45			-0.026	-0.83	0.007	0.20
46 < Hrs < 50			-0.047	-1.39	-0.007	-0.19
51 < Hrs < 60			-0.062	-1.68	-0.007	-0.18
Hrs > 61			-0.102	-2.13	-0.026	-0.51
PREFERENCE FOR HOURS WORKED (⁂)						
Actual > Desired			-0.369	-25.13	-0.368	-25.13
Desired > Actual			-0.148	-6.33	-0.142	-6.08
INCOME						
lnWage (Real Gross Hourly Labour Income)					0.143	6.61
Expected ln Wage (proxy for wage norm)					-0.120	-0.90
LABOUR FORCE STATUS (◇)						
Job Temporary					-0.163	-5.13
Job Fixed Contract					-0.057	-1.21
Self-Employed					-0.065	-0.44
Public Sector Worker					0.080	2.99
PERSONAL CHARACTERISTICS (■)						
20 < Age < 24					-0.230	-5.44
25 < Age < 29					-0.189	-3.11
30 < Age < 34					-0.108	-1.40
35 < Age < 39					-0.118	-1.30
40 < Age < 44					-0.124	-1.19
45 < Age < 49					-0.129	-1.11
50 < Age < 54					-0.179	-1.38
55 < Age < 60					-0.205	-1.41
Age > 61					-0.131	-0.76
Married					0.019	0.73
NO OF EMPLOYEES AT THE WORKPLACE (#)						
10 < Size < 200					-0.083	-4.14
200 < Size < 1000					-0.083	-3.28
Size > 1000					-0.101	-3.22
INDUSTRY (⌂)						
Energy Extraction					0.032	0.32
Engineering					-0.080	-0.84
Manufacturing					-0.121	-1.28
Construction					0.036	0.35
Distribution					-0.109	-1.19
Transportation					-0.041	-0.42
Finance					-0.024	-0.25
Services					0.074	0.81
REGION (§)						
South East					0.081	0.90
South West					-0.023	-0.21
East Anglia					0.082	0.60
Midlands					0.122	1.21
North East & Yorkshire					0.092	0.86
Wales					0.071	0.55
Scotland					0.144	1.03
Number of observations	50223					
Number of groups	12792					

The Symbols denote the excluded categories: †: Year 1992; ‡: Hours less than 20; ⁂: Continue with the same number of hours; ◇: Permanent Worker; ■: 18, 19 and 66 and over years old, Not Married; #: Less than 9 employees; ⌂: Agriculture §: North West and Merseyside.

TABLE 2.2	OLD FEDERAL STATES						NEW FEDERAL STATES			
	Spec 1		Spec 2		Spec 3		Spec 4		Spec 5	
	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat
Constant	7.722	281.9	7.678	191.51	6.692	13.94	6.628	159.75	6.480	69.70
YEAR DUMMIES (†)										
1986	-0.131	-3.72	-0.126	-3.59	-0.135	-3.46				
1987	-0.181	-4.92	-0.188	-5.12	-0.204	-5.40				
1988	-0.376	-10.68	-0.370	-10.52	-0.394	-9.65				
1989	-0.392	-10.50	-0.390	-10.46	-0.418	-9.34				
1990	-0.434	-10.86	-0.412	-10.30	-0.442	-9.11				
1991	-0.458	-12.71	-0.435	-12.03	-0.472	-9.69				
1992	-0.284	-7.83	-0.260	-7.14	-0.302	-5.89				
1993	-0.612	-16.54	-0.586	-15.80	-0.641	-11.67	0.413	7.28	0.407	7.16
1994	-0.683	-18.32	-0.661	-17.70	-0.704	-12.18	0.261	4.54	0.251	4.34
1995	-0.701	-18.69	-0.671	-17.88	-0.716	-11.66	0.211	3.66	0.209	3.61
1997	-0.757	-20.15	-0.742	-19.76	-0.797	-11.66	0.211	3.57	0.203	3.42
1998	-0.777	-20.05	-0.751	-19.35	-0.810	-11.12	0.157	2.62	0.156	2.59
1999	-0.765	-20.35	-0.749	-19.91	-0.811	-10.74	0.127	2.14	0.126	2.11
2000	-0.705	-18.20	-0.699	-18.04	-0.773	-9.66	0.116	1.89	0.108	1.75
2001	-0.733	-18.61	-0.730	-18.55	-0.808	-9.58	0.105	1.70	0.101	1.64
2002	-0.800	-19.47	-0.797	-19.39	-0.761	-8.57	0.019	0.30	0.007	0.11
HOURS (‡)										
21 < Hrs < 34			0.091	2.52	0.126	3.37			0.175	1.85
35 < Hrs < 40			0.190	5.77	0.256	7.30			0.235	2.78
41 < Hrs < 45			0.215	5.81	0.290	7.40			0.277	3.16
46 < Hrs < 50			0.199	4.84	0.286	6.60			0.195	2.10
51 < Hrs < 60			0.284	6.00	0.388	7.76			0.254	2.54
Hrs > 61			0.161	2.52	0.289	4.31			0.236	1.91
PREFERENCE FOR HOURS WORKED (⁂)										
Actual > Desired			-0.203	-11.13	-0.204	-11.19			-0.072	-1.66
Desired > Actual			-0.153	-6.70	-0.174	-7.59			-0.185	-3.39
LABOUR FORCE STATUS (◇)										
Job Temporary					-0.177	-3.37				
Job Fixed Contract					-0.030	-0.87				
Self-Employed					0.160	2.91				
Public Sector Worker					0.153	4.31				
INCOME										
lnWage (Real Gross Hourly Labour Income)					0.205	10.05				
Expected ln Wage					-0.074	-0.44				
PERSONAL CHARACTERISTICS (■)										
20 < Age < 24					-0.019	-0.19				
25 < Age < 29					0.033	0.31				
30 < Age < 34					0.126	1.07				
35 < Age < 39					0.185	1.42				
40 < Age < 44					0.168	1.17				
45 < Age < 49					0.082	0.52				
50 < Age < 54					0.043	0.25				
55 < Age < 60					-0.080	-0.42				
Age > 61					-0.021	-0.10				
Married					-0.027	-0.96				
ESTABLISHMENT SIZE (⋕)										
20 < Size < 200					-0.034	-1.31				
200 < Size < 2000					0.016	0.54				
Size > 2000					0.031	1.04				
INDUSTRY (⌂)										
Agriculture					-0.113	-0.96				
Energy – Extraction					0.056	0.52				
Manufacturing					-0.029	-0.67				
Construction					0.031	0.55				
Trade					-0.042	-0.86				
Transportation					-0.032	-0.44				
Banking – Insurance					0.119	1.39				
Services					0.037	0.83				
REGION (§)										
Schleswig-Holstein					0.385	1.44				
Niedersachsen					0.314	1.27				
Westfalen					0.046	0.20				
Hessen					0.089	0.35				
Rheinland-Pfalz-Saaland					0.161	0.62				
Baden-Württemberg					-0.033	-0.13				
Bayern					-0.033	-0.14				
Number of observations	75385						19827			
Number of groups	14336						4859			

The Symbols denote the excluding categories: †: Year 1985; ‡: Hours less than 20; ⁂: Continue with the same number of hours; ◇: Permanent Worker; ■: 18, 19 and 66 and over years old, Not Married; ⋕: Less than 19 employees; ⌂: Other Industry; §: West and Unified Berlin Region.

4.2. Job Insecurity

As noted above, perceived job insecurity increased in Germany during the 1990s. Does this increase account for much, if any, of the slump in job satisfaction?

An impact of insecurity on job satisfaction has in part been picked up already in the previous analysis through the effect of non-permanent types of employment. But insecurity extends to those on permanent contracts. Suitable data on perceived insecurity is available for Germany, but only for selected years starting in 1985. Table 3 shows the results of including this variable among the determinants of job satisfaction. Specs 1 and 4 show the benchmark specifications with just time dummies. In Specs 2 and 4, both the labour force characteristics variables (which are loose proxies for the level of insecurity) and the workers' expectations of job loss dummies are included. As is evident, job security has a sizeable and a highly significant effect on West and East German job satisfaction. Compared to the reference category (job loss thought to be "definite"), progressively higher levels of job satisfaction are recorded as the fear of job loss diminishes. In addition, being in a temporary job contract has a further downward impact on job satisfaction in West Germany. In West Germany, there is evidently some positive satisfaction associated with fixed-term jobs, once one controls for the negative impact of the insecurity which may surround these jobs. The pattern remains the same when all other control variables are included (Spec 3)[25].

Over the whole period 1985 to 1998, controlling for job security makes little impact on the estimated period effect. However, over the period 1991 to 1998 (when fears of job loss were rising), the raw period effect declines by 0.31, but the period effect after controlling for the job insecurity variables reduces by 0.23. Thus it does transpire, as expected, that rising insecurity was a partial factor in explaining the decline of insecurity over this restricted period. Nevertheless, if insecurity were that important, its earlier decline during the 1980s should have contributed to a rise in job satisfaction. When also the control variables are included, no part of the decline in job satisfaction is accounted for. This finding confirms that of Jürges (2003).

[25] Due to missing values we could not replicate Spec 3 for East Germans.

Table 3 The Impact of Job Insecurity Job Satisfaction

	OLD FEDERAL STATES						NEW FEDERAL STATES			
	Spec 1		Spec 2		Spec 3		Spec 4		Spec 5	
	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat
Constant	7.654	273.00	6.456	59.92	5.966	6.77	6.530	151.6	4.980	42.63
YEAR DUMMIES (†)										
1987	-0.183	-4.93	-0.192	-5.25	-0.219	-5.27				
1989	-0.383	-10.00	-0.407	-10.74	-0.483	-7.86				
1991	-0.429	-11.27	-0.449	-11.88	-0.519	-6.89				
1993	-0.577	-14.75	-0.545	-14.00	-0.628	-6.85	0.391	6.23	0.156	2.51
1994	-0.662	-16.66	-0.606	-15.21	-0.682	-6.82	0.216	3.39	0.003	0.05
1998	-0.737	-17.01	-0.680	-15.63	-0.795	-5.79	0.140	2.02	-0.137	-1.99
LOSS OF JOB (*)										
Probable			0.266	2.33	0.274	2.40			1.041	8.11
Improbable			1.077	10.31	1.074	10.29			2.040	16.32
Definitely Not			1.326	12.64	1.327	12.67			2.227	15.41
LABOUR FORCE (◇)										
Job Temporary			-0.347	-3.53	-0.194	-1.90				
Job Fixed			0.200	3.14	0.235	3.62				
Self-Employed			0.072	0.76	0.094	0.96				
Public Sector Worker			0.154	2.54	0.106	1.66				
HOURS (‡)										
21 < Hrs < 34					0.184	2.80				
35 < Hrs < 40					0.263	4.24				
41 < Hrs < 45					0.289	4.17				
46 < Hrs < 50					0.296	3.87				
51 < Hrs < 60					0.323	3.65				
Hrs > 61					0.224	1.87				
PREFERENCE FOR HOURS WORKED (⁂)										
Actual > Desired					-0.220	-7.13				
Desired > Actual					-0.204	-5.13				
INCOME										
lnWage (Real Gross Hourly Labour Income)					0.167	4.63				
Expected ln Wage					-0.066	-0.23				
PERSONAL CHARACTERISTICS (■)										
20 < Age < 24					-0.027	-0.16				
25 < Age < 29					0.056	0.30				
30 < Age < 34					0.141	0.68				
35 < Age < 39					0.266	1.16				
40 < Age < 44					0.342	1.36				
45 < Age < 49					0.273	1.00				
50 < Age < 54					0.281	0.95				
55 < Age < 60					0.169	0.53				
Age > 61					-0.020	-0.05				
Married					-0.088	-1.79				
ESTABLISHMENT SIZE (#)										
20 < Size < 200					0.021	0.47				
200 < Size < 2000					0.054	1.14				
Size > 2000					0.086	1.76				
INDUSTRY (⌂)										
Agriculture					-0.349	-1.52				
Energy – Extraction					0.408	2.22				
Manufacturing					0.067	0.87				
Construction					0.189	1.87				
Trade					0.147	1.67				
Transportation					0.030	0.23				
Banking – Insurance					0.227	1.44				
Services					0.201	2.46				
REGION (§)										
Schleswig-Holstein					0.047	0.09				
Niedersachsen					0.394	0.81				
Westfalen					-0.130	-0.28				
Hessen					-0.028	-0.05				
Rheinland-Pfalz-Saaland					0.625	1.16				
Baden-Wurttemberg					-0.428	-0.88				
Bayern					-0.329	-0.72				
	29835 8584						8231 3401			

The Symbols denote the excluding categories: *: Definitely Yes; †: Year 1985 (W. Germany) 1991 (E. Germany); other reference categories as for Table 2.

4.3. Other Job Characteristics

Though neither the British nor the German panel has information about work intensification during the period in which job satisfaction was declining, as noted above the GSOEP does record limited information about job characteristics. Though these characteristics display considerable stability over the period, some changes could have contributed to declines in job satisfaction. Table 4 presents analyses which include dummy variables representing these characteristics. It would be useful to include both job characteristics and job security jointly as explanatory variables in the job satisfaction regressions in order to examine how much they actually contribute to the overall decline in job satisfaction. Unfortunately, there is little overlap in the years for which these variables are available. We have therefore estimated separate regressions to assess the effect of changes in job characteristics.

Table 4 reveals that job satisfaction is greater in jobs endowed with variety and jobs facilitating learning. An interesting observation is that being able to work independently (in which employees control the equipment and their work pace) has a quite high ranking especially for the East German workers. On the other hand, tight monitoring, physically demanding work and mentally strenuous work significantly depress the average job satisfaction scores. Good relations with colleagues, and, especially, avoidance of conflict with management have positive effects on satisfaction. Also, employees who identify a health and safety risk at their workplaces are much more likely to say that they are dissatisfied.

As in the case of job security, there is little difference in the estimated period effects. The conclusion is that no changes in the observed job characteristics are able to explain the secular decline in job satisfaction[26].

[26] By way of variation we also recoded the dependent variable (job satisfaction) as a binary outcome, and estimated fixed effects logit specifications. The effect of the hours mismatch, job security and characteristics of work remains the same. Inspection of their impact on the year dummy coefficients reveals that there are no significant differences between Specs for either Germany or Britain. However, by choosing binary specification one is jettisoning potentially useful. As yet a further variation, we estimated an alternative panel fixed effects specification of the determinants of job satisfaction, where the disturbances are assumed to be panel level heteroscedastic only. The results remained the same.

TABLE 4 The Impact of Job Characteristics on Job Satisfaction

	OLD FEDERAL STATES (ex - W.GERMANY)						NEW FEDERAL STATES (ex – EAST GERMANY)					
	Spec 1		Spec 2		Spec 3		Spec 4		Spec 5		Spec 6	
	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat
Constant	7.655	261.85	7.635	104.96	7.636	5.71	6.875	131.51	7.328	21.55	9.316	1.44
YEAR DUMMIES (†)												
1987	-0.192	-5.09	-0.203	-5.37	-0.192	-4.32						
1989	-0.400	-10.04	-0.402	-10.02	-0.382	-5.10						
1995	-0.658	-14.37	-0.640	-13.83	-0.613	-4.31						
2001	-0.661	-12.52	-0.665	-12.56	-0.648	-3.04	-0.114	-1.37	-0.121	-1.44	0.338	0.79
HOURS (‡)												
21 < Hrs < 34			0.158	1.71	0.261	2.75			-0.287	-0.80	-0.170	-0.46
35 < Hrs < 40			0.188	2.56	0.321	3.83			-0.245	-0.73	-0.052	-0.15
41 < Hrs < 45			0.151	1.77	0.303	3.20			-0.081	-0.23	0.153	0.41
46 < Hrs < 50			0.157	1.65	0.315	2.99			-0.158	-0.42	-0.027	-0.07
51 < Hrs < 60			0.160	1.39	0.337	2.70			-0.065	-0.15	0.117	0.25
Hrs > 61			-0.070	-0.41	0.294	1.66			0.227	0.35	0.460	0.67
PREFERENCE FOR HOURS WORKED (⁂)												
Actual > Desired			-0.192	-4.48	-0.164	-4.00			-0.377	-2.07	-0.252	-1.42
Desired > Actual			-0.149	-2.60	-0.149	-2.67			-0.371	-1.58	-0.254	-1.11
JOB CHARACTERISTICS (∴)												
Job Has Varied Duties: Fully Applies					0.588	9.10					0.861	2.05
Partly Applies					0.255	4.33					0.694	1.75
Job is Physically Demanding: Fully Applies					-0.384	-5.87					-0.181	-0.68
Partly Applies					-0.166	-3.49					-0.089	-0.45
Job Duties Determined by Self: Fully Applies					0.289	5.37					0.582	2.42
Partly Applies					0.035	0.74					0.420	2.03
Tightly Monitored: Fully Applies					-0.200	-3.66					-0.228	-1.10
Partly Applies					-0.178	-4.66					-0.189	-1.22
Shift Work: Fully Applies					0.023	0.36					-0.389	-1.67
Partly Applies					-0.005	-0.06					0.093	0.39
Good Relations with Colleagues: Fully Applies					0.257	3.18					0.798	1.79
Partly Applies					-0.064	-0.72					0.400	0.87
Conflict with Supervisors: Fully Applies					-1.355	-13.33					-0.893	-2.07
Partly Applies					-0.730	-16.78					-0.997	-6.61
Work Experience Useful for Advancement: Fully Applies					0.409	7.57					1.385	5.48
Partly Applies					0.192	4.25					0.979	4.30
Job has Undesirable Working Conditions: Fully Applies					-0.219	-3.75					-0.241	-1.04
Partly Applies					-0.033	-0.71					0.039	0.22
Job is Mentally Strenuous: Fully Applies					-0.336	-5.90					-0.139	-0.54
Partly Applies					-0.122	-2.76					-0.021	-0.10
INCOME												
lnWage (Real Gross Hourly Labour Income)					0.156	3.41					0.126	0.59
ln Wage-Expected (Comparison Income)					-0.748	-1.46					-2.789	-0.90
LABOUR FORCE (◇)												
Job Temporary					-0.219	-1.31					0.062	0.05
Job Fixed					-0.009	-0.10					-0.204	-0.65
Self-Employed					-0.366	-1.67					-0.920	-1.27
Public Sector Worker					0.124	1.47					0.178	0.68
PERSONAL CHARACTERISTICS (■)												
20 < Age < 24					-0.024	-0.12					-0.535	-0.28
25 < Age < 29					0.092	0.38					-0.760	-0.45
30 < Age < 34					0.275	1.01					-0.897	-0.59
35 < Age < 39					0.424	1.39					-0.512	-0.37
40 < Age < 44					0.422	1.25					-0.663	-0.55
45 < Age < 49					0.408	1.11					-0.406	-0.39
50 < Age < 54					0.382	0.97					-0.410	-0.49
55 < Age < 60					0.287	0.67					-0.257	-0.44
Age > 61					0.305	0.64						
Married					0.096	1.49					0.139	0.51
ESTABLISHMENT SIZE (#)												
20 < Size < 200					-0.076	-1.26					0.309	1.58
200 < Size < 2000					-0.001	-0.01					0.106	0.48
Size > 2000					-0.014	-0.23					0.300	1.21
INDUSTRY (⌂)												
Agriculture					-0.178	-0.57					2.463	1.61
Energy – Extraction					0.623	2.72					1.517	1.12

Manufacturing			0.250	2.32			3.063	1.83
Construction			0.385	2.75			2.049	1.24
Trade			0.188	1.55			3.474	2.24
Transportation			0.247	1.41			2.386	1.58
Banking - Insurance			0.435	2.17			1.364	0.93
Services			0.213	1.86			2.553	1.75
REGION (§)								
Schleswig-Holstein			0.706	1.07				
Niedersachsen			0.799	1.30				
Westfalen			0.334	0.58				
Hessen			0.945	1.44				
Rheinland-Pfalz-Saaland			0.751	1.10				
Baden-Wurttemberg			0.734	1.18				
Bayern			0.590	0.99				
Mecklenburg-Vorpommern							0.038	0.03
Brandenburg							-0.873	-0.73
Sachsen Anhalt							1.200	0.53
Sachsen							-0.170	-0.05
Number of observations	19475				2996			
Number of groups	8542				2224			

The Symbols denote the excluding categories: ∴: Does not Apply; †: Year 1985 (W. Germany) 1995 (E. Germany);
§: Thüringen (E. Germany) for other reference categories, see Table 2.

TABLE 5
WITHIN-COHORT ANALYSIS OF JOB SATISFACTION BRITAIN 1992 AND 2001.

	Spec 1		Spec 2		Spec 3		Spec 4		Spec 5		Spec 6	
	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat	Coef.	t-rat
Constant	4.394	209.2	4.355	161.3	4.055	39.0	2.816	5.60	4.645	29.4	3.691	5.5
Year 2001	-0.164	-5.66	-0.087	-1.93	-0.201	-6.93	-0.029	0.57	-0.134	-3.72	0.003	0.04
Work Effort Index			-0.387	-2.20							-0.361	-2.11
Participation Index					0.357	3.34					0.236	1.84
Task Discretion Index							0.644	3.14			0.349	1.41
Over-Education									-0.566	-1.65	-0.602	-1.86
Under-Education									-0.418	-1.65	-0.729	-1.86
Real Wages											-0.002	-0.20
Female											-0.059	-0.25
No. of Observations	144		144		144		144		144		144	

† Eight date-of-birth cohorts at four-year intervals were defined, each divided into 9 major occupation groups, giving 72 cohorts and 144 observations over the two surveys. The oldest cohorts were 56-60 in 2001, while the youngest were 20 to 24 in 1992. Thus, for example, one cohort is the group of professional workers who were born between 1957 and 1960, who were thus between 32 and 36 in 1992, then between 41 and 45 in 2001.
For definitions of the Work Effort Index, the Task Discretion Index and the Participation Index, see text.

*pattern robust to whether regression weights by cohort size

4.4. Work Intensification, Task Discretion and Over-Education.

To investigate the potential impact on job satisfaction of work intensification, declining task discretion and increased over-education over this period, we turn instead to the Employment in Britain Survey of 1992 and the 2001 Skills Survey. Though these provide just two data points on job satisfaction, what they lack in data frequency they make up for in the richness of their detailed information about job characteristics. We generated a short pseudo-panel from these two samples. Eight date-of-birth cohorts at four-year intervals were defined, each divided into 9 major occupation groups, giving 72 occupation-cohorts and 144 observations over the two surveys. The oldest cohorts were 56-60 in 2001, while the youngest were 20 to 24 in 1992. Thus, for example, one cohort is the group of professional workers who were born between 1957 and 1960, who were thus between 32 and 36 in 1992, then between 41 and 45 in 2001. With this pseudo-panel, we estimated fixed effects models of the determinants of job satisfaction analogous to those used with the true panels in Tables 1 to 4. With only two periods, this estimation is identical to a difference estimator. In effect, this

method allows us to estimate the impact of changing job conditions on the changes in average job satisfaction experienced by each of the 72 occupation-cohorts.[27]

The findings are presented in Table 5, using the same strategy as with earlier tables. Spec. 1, the benchmark specification, shows that job satisfaction was significantly lower in 2001 than in 1992, consistent with Figure 1c above. In Spec. 2 we introduce work intensity, which is shown to have a strong, negative and significant impact on job satisfaction, as predicted. The more that an occupation-cohort's work was intensified over the 1992 to 2001 period, the greater was its decline in job satisfaction. Moreover, it can be seen that there is a significant reduction in the year dummy coefficient from -0.164 to -0.087, indicating that work intensification is accounting for a substantial part of the overall decline in job satisfaction.

In Specs. 3 and 4 we separately introduce the two indices of employee involvement defined above: the Participation Index and the Task Discretion Index. As can be seen, both attract strong positive coefficients: thus the more that an occupation-cohort's average levels of participation or of task discretion increased over the period, the more its job satisfaction rose. Unsurprisingly, the Participation Index accounts for none of the decline in overall job satisfaction over the period since there was a rise in the extent of participation. However, the inclusion of the Task Discretion Index is sufficient on its own to account for almost all of the fall in job satisfaction. Thus, the combination of the two factors, that task discretion is a robust determinant of job satisfaction and that it has declined significantly in Britain, appears to go a long way in unravelling the mystery of declining job satisfaction in Britain. Indeed, conditional on task discretion, there was no statistically significant fall in job satisfaction.

Spec. 5 introduces measures of the educational mismatch between worker and job. As discussed above, over-education and under-education are indicators of a lack of match between an employee's education level and that required by the job. Both states of mismatch carry substantial negative coefficients, but they are not very precisely determined: only in the case of over-education is the coefficient significantly different from zero at the 10% level. The negative relationship with job satisfaction is consistent with a good deal of previous literature. But these educational mismatches are only a minor part of any explanation of the decline in job satisfaction: the year dummy coefficient is only modestly smaller than in the benchmark regression.

Finally, in Spec. 6 all the above variables are included. Together, all of the decline in job satisfaction is accounted for by the movements in work effort, task discretion, participation and educational mismatch. In this regression we have included two further control variables which have been found in the literature to be associated with job satisfaction: the gender proportions of the occupation-cohorts and the level of pay. Neither changes in the proportions of female workers, nor differential rises in pay, account for any of the variation in the change of job satisfaction over the 1992 to 2001 period.[28]

[27] This method of analysis gives rise to problems if cohort sizes become too small, because then the mean values of variables within each cohort can have substantial errors, and complex errors-in-variables estimation are called for (Deaton, 1985). The average cohort size in our sample is 49. To minimise any distortions from outlying small cohorts, we used weighted estimates, where the weight was the cohort size. The pattern of results is, however, not sensitive to whether or not weights are used.

[28] Other possible determinants of the trends are: trade union coverage; establishment size; computer usage; team working; age of cohort. None of these were found to have significant impacts on job satisfaction, and their inclusion made no significant difference to the pattern of the other coefficients; given the small number of occupation-cohorts, they were excluded from Spec. 6 in the interests of parsimony.

5. Conclusion

Maintaining that established trends in job satisfaction signal trends in worker well-being, this paper has investigated whether these trends can be accounted for by changes in the quality of jobs over recent decades. There is evidence of falls in job satisfaction in both Britain and Germany, as shown in representative surveys. In the United States, job satisfaction has fallen very slowly over more than two decades. In many other countries, the series of data on job satisfaction is too short to be confident that any secular trend has taken place.

The focus of our explanations has centred on Germany and Britain, where not only is the trend most clearly established and corroborated over at least a decade, also there is sufficient data on the features of jobs to investigate hypotheses drawn from the literature about changing labour markets in the modern era. The main findings are:

- The intensification of work effort and declining task discretion account for the fall in job satisfaction in Britain. The modest rise in participation in organisational decision-making only mitigated the downward pressure on job satisfaction to a small extent.
- Contrary to the arguments of some popular commentary, job insecurity is not a plausible explanation of declining job satisfaction in Britain. Perceptions of insecurity decreased during the 1990s, following the falls in the aggregate unemployment rate. In Germany, by contrast, insecurity increased during the 1990s. Moreover, we confirm the findings of others that perceptions of insecurity cause substantive decreases in job satisfaction. Our findings indicate that the increase in perceived job insecurity accounts for a small part of the fall in job satisfaction in Germany during the 1990s. However, taken over the whole period of decline in job satisfaction, from 1984 till the late 1990s, job insecurity fails to account for the change.
- In Britain, the proportion whose hours preferences were well-matched to their jobs was more or less stable, but in Germany there was a modest fall in the proportions of people working the number of hours that they wanted to. However, while working too few or too many hours is a significant source of job dissatisfaction, the changes were too small to have made much of an impact on job satisfaction in Germany. In Britain, the increasing proportions of over-educated workers has had a small downward impact on job satisfaction.
- Job characteristics other than insecurity and worker-job mismatches are only very approximately and vaguely measured in the German panel data; as has been found in previous work, these loose measures do not help with an explanation of change. Unfortunately, the decline in job satisfaction between 1984 and 1998 in Germany remains a puzzle.

The collection of systematic and consistent series on worker well-being is a worthwhile means of tracking how workers in different countries respond to changes in the quality of their jobs. One conclusion of the descriptive part of the paper, therefore, is that consistency and comparability over time is a very important objective when designing surveys. That said, job satisfaction is not necessarily the ideal instrument for capturing well-being; comparisons between groups in the average level of well-being tell us little or nothing about differences in their working conditions. Only changes over time are meaningful in this respect; moreover, better instruments for capturing different dimensions of workers' emotional responses to their working conditions could be usefully adapted for nationally-representative survey purposes. Survey designers have to balance the need for consistent series with the desire to move on to superior instruments.

Our inquiry into the explanations of change has been partially successful, in that we have accounted, in a purely statistical sense though using theoretically chosen explanatory variables, for the changes in

job satisfaction in Britain. Nevertheless, a full explanation calls for deeper insights into the reasons for the changes in task discretion in modern workplaces where this happens, and in understanding the causes of work intensification (Green, 2004b). Moreover, future work in this mould can only be supported if survey designers are willing and able to devote sufficient interview time to proper instruments to measure work characteristics. In our view, the domain of work is extraordinarily under-researched, considering the importance that this has for most people's lives.

Appendix 1 – Descriptive Statistics.

Table A1 Descriptive Statistics for GSOEP (1985-2002) and BHPS (1992-2001) in Table 2.

	GSOEP		BHPS	
YEAR	**N**	**Mean Job Sat**	**N**	**Mean Job Sat**
1985	5559	7.545		
1986	5592	7.416		
1987	5404	7.409		
1988	5346	7.262		
1989	4839	7.260		
1990	3431	7.265		
1991	7442	6.974		
1992	5135	7.416	3768	5.442
1993	6824	7.056	3630	5.366
1994	6781	7.013	3687	5.304
1995	6721	6.993	3696	5.295
1996			3905	5.340
1997	6862	6.994	4104	5.396
1998	6343	6.979	5450	5.350
1999	7400	7.017	7428	5.305
2000	10749	7.179	7500	5.327
2001	10669	7.173	7431	5.382
2002	9804	7.067		
HOURS				
Hrs < 20	7.009	10688	7003	5.707
21 < Hrs < 34	7.047	9713	5640	5.556
35 < Hrs < 40	7.207	50302	17637	5.232
41 < Hrs < 45	7.120	21490	8206	5.267
46 < Hrs < 50	7.139	11529	6019	5.274
51 < Hrs < 60	7.213	7173	4497	5.263
Hrs > 61	7.043	3296	1597	5.255
PREFERENCE FOR HOURS WORKED				
Actual > Desired	7.060	66099	16381	4.999
Desired > Actual	7.008	17491	4186	5.300
Desired = Actual	7.403	31438	30032	5.544
LABOUR FORCE STATUS				
Job Temporary	6.639	3081	2735	5.216
Job Fixed Contract	6.925	6272	866	5.258
Job Permanent	7.171	87755	46998	5.357
Self-Employed	7.245	8261	94	5.319
Public Sector Worker	7.282	27923	14356	5.410
Vocational Training	7.451	5697		
Job Tenure 1 year	7.287	12067	14938	5.439
2 years	7.213	8928	7627	5.354
3 years	7.223	7112	5566	5.307
4 years	7.132	5528	4053	5.267
5 years	7.119	4897	3211	5.290
6 – 7 years	7.150	8743	1833	5.300
8 – 9 years	7.155	7185	1263	5.329
10 – 15 years	7.196	13378	3832	5.289
16 – 20 years	7.198	6993	1199	5.351
20 ++ years	7.154	15868	1659	5.368
PERSONAL CHARACTERISTICS				
Age < 20	7.563	3703	3338	5.507
20 < Age < 24	7.263	10789	5932	5.266
25 < Age < 29	7.220	13326	7051	5.256
30 < Age < 34	7.157	15015	7316	5.330
35 < Age < 39	7.145	15054	7049	5.307
40 < Age < 44	7.062	14018	6035	5.331
45 < Age < 49	7.062	12920	5360	5.343
50 < Age < 54	7.005	11181	4469	5.368
55 < Age < 60	7.006	8736	2875	5.508
Age > 61	7.396	2128	1094	5.863
Married	7.123	69094	27835	5.401
Male	7.180	66660	24831	5.200
Female	7.121	48241	25768	5.490
German / British			48691	5.353
Foreign			1908	5.207
YEAR OF BIRTH				
1921 – 1930	7.681	1324	256	6.479
1931 – 1940	7.169	7911	2286	5.704
1941 – 1950	7.037	16378	8967	5.388
1951 – 1960	21960	7.038	11966	5.338
1961 – 1970	23138	7.181	14741	5.300
1971 – 1980	9639	7.273	10563	5.318
1981 – 1984	1393	7.414	1806	5.604

INCOME				
Wage (Real Gross Hourly Labour Income)				
1st Quartile	6.944	26718	12637	5.459
2nd Quartile	7.109	26714	12608	5.304
3rd Quartile	7.236	26710	12687	5.281
4th Quartile	7.291	34759	12667	5.347
ESTABLISHMENT SIZE				
Size < 20	7.220	41778		
20 < Size < 200	7.066	27615		
200 < Size < 2000	7.103	22482		
Size > 2000	7.195	23026		
Size < 10			41025	5.301
10 < Size < 200			25941	5.343
200 < Size < 1000			9913	5.216
Size > 1000			5171	5.258
INDUSTRY				
Agriculture	1864	6.922	484	5.530
Energy – Extraction	1780	7.148	2518	5.268
Engineering			4487	5.200
Manufacturing	33108	7.085	4517	5.208
Construction	8698	7.152	1720	5.412
Distribution			10425	5.414
Trade	12191	7.012		
Transportation	3808	7.085	3084	5.132
Banking – Insurance - Finance	3717	7.324	6611	5.228
Services	36138	7.222	16753	5.471
Other	13597	7.285		
OCCUPATION				
Blue Collar	26511	6.964		
Untrained	3750	6.685		
Semi-Trained	9755	6.872		
Trained	10949	7.110		
Foreman	1386	7.087		
Craftsman	671	7.226		
White Collar	65266	7.156		
Industry Foreman	3721	6.811		
Untrained Employee	12895	7.014		
Semi-trained Employee	18526	7.176		
Professional	21607	7.231		
Managerial	8517	7.285		
Other	23124	7.373		
Managers, Large Firms			5403	5.391
Managers, Small Firms			3045	5.488
Professional Employees			2558	5.293
Int. Non-manual, Workers			6719	5.350
Int. Non-manual, Foreman			2408	5.335
Junior Non-manual			11592	5.366
Personal Service Workers			3359	5.594
Foreman Manual			2523	5.323
Skilled Manual Workers			5338	5.174
Semi-Skilled Manual Workers			5198	5.161
Unskilled Manual Workers			2058	5.520
Farmers			30	5.666
Agricultural Workers			304	5.519
REGION				
West Germany	87026	7.221		
East Germany	27875	6.948		
South			18679	5.334
North			19118	5.361
Wales			5085	5.436
Scotland			7214	5.294
EDUCATION				
Less than High School	25597	7.115	11349	5.390
High School	62209	7.129	15252	5.394
More than High School	18339	7.220	13495	5.312
College – University	15207	7.240	27219	5.269
Vocational Degree	77353	7.150	19418	5.315

Table A2 – Descriptive Statistics for Cohorts of the 1992 Employment in Britain (EIB) and 2001 Skills Survey (SS) used in Table 5.

VARIABLES	MEAN	
	EIB (1992)	SS (2001)
Job Satisfaction	4.42	4.25
Work Intensity	-0.11	0.07
Task Discretion	2.43	2.22
Participation	0.92	1.01
Over-Education	0.35	0.36
Under-Education	0.51	0.18
Real Wages	6.28	7.49
Female	0.50	0.50
Observations	72	72

Appendix 2: Data Sources.

This appendix lists and briefly describes data sources used directly in this paper. Their common characteristics are that all the surveys are representative of national populations, all respondents are identified using some form of random sampling procedure, and all ask employed respondents about their job satisfaction using questions and response scales that remained identical across time within each country.

- *British Household Panel Study (BHPS)*

The BHPS is a nationally representative panel data set of individuals and households residing in Britain. All adults in sampled households are interviewed once a year. The original sample, selected following a stratified random sampling procedure, was first interviewed in 1990. It comprises some 5,500 households and 10,300 individuals. New households formed by members splitting from their "old" household are added to the sample. Members leave through death and through sample attrition. The panel is also periodically refreshed with new samples.
Full details are at: http://www.iser.essex.ac.uk/bhps
Funding Source: The UK Economic and Social Research Council.

- *The 1992 Employment in Britain (EIB), and the 2001 Skills Survey(SS)*

The Employment in Britain research programme comprised two surveys, one of employed the other of unemployed people, living in Britain in 1992 and aged 20 to 60. Only the former is used in this paper. It comprised an achieved sample of 3,869 individuals. Stratified random sampling was used to select households from sectors drawn from the Postal Address File. One person was interviewed per household, chosen randomly from those that were found and eligible at each address. Interviews were face to face, and involved three parts: the respondent's work history, the main interview concerning current and recent experiences of work, and a short self-completion interview, completed in the presence of but without intervention by the interviewer. Weights were applied to correct for the differential probability of selection depending on the number of eligible persons at each address. Since the achieved sample slightly over-represented women, compared with Labour Force Survey data, a second small correction was also applied, reducing the weight for women and raising the weight for men so as to match national data. See Gallie et al (1998) for full details.
Funding Source: An industrial consortium, the UK Employment Department, the UK Employment Service, and the Leverhulme Trust.

The 2001 Skills Survey surveyed individuals in employment aged 20 to 60 in Britain. The focus of the survey was the skills that individuals use in their jobs. Many of the questions were designed to replicate identically those in Employment in Britain. The achieved sample was 4470 cases. Interviews were face to face, and averaged 53 minutes. Stratified random sampling was used to select households from sectors drawn from the UK Postal Address File. One person was interviewed per household, chosen randomly from those that were found and eligible at each address. Weights were calculated to correct for the differential probability of selection depending on the number of eligible persons at each address. Since the achieved sample slightly over-represented women, compared with Labour Force Survey data, another small correction was also applied, reducing the weight for women and raising the weight for men so as to match national data. See Felstead et al (2002) for full details.
Funding Source: TheUK Government's Department for Education and Skills.

- *European Community Household Panel (ECHP)*

The ECHP is a harmonised cross-national longitudinal survey focusing on household income and living conditions. It also includes items on health, education, housing, migration, demographics and employment characteristics. The survey runs from 1994 to 2001. In the first wave (1994) a sample of some 60,500 households i.e. approximately 130,000 adults aged 16 years and over were interviewed across 12 member states (Belgium, Denmark, Germany, Greece, Spain, France, Italy, Ireland, Luxembourg, The Netherlands, Portugal, the United-Kingdom). In wave 2 (1995) Austria, then Finland in wave 3 (1996) joined the ECHP. From Wave 4 (1997) Sweden provides cross-sectional data in the UDB format derived from its National Survey on Living conditions.

For most of the countries the surveys were carried out using the harmonised ECHP questionnaire. For some countries the institutes in charge of the production of the ECHP converted national data surveys into ECHP format to replace the ECHP from 1997 onwards. In Germany and the United Kingdom, the derived national data was provided from 1994 to 2001. Care is needed in analysing the converted data for these countries, as some information might not have been collected in the national surveys so that they will appear as missing in the ECHP. In other cases, variables that were not collected in the national survey were imputed based on similar variables.
Full details at: http://www.datashop.org/en/bases/echp.html and
http://epunet.essex.ac.uk/echp_userguide_toc_content.php

- *The General Household Survey (GHS)*

The GHS started in 1971 and has been carried out continuously since then, except for breaks in 1997-1998 when the survey was reviewed, and 1999-2000 when the survey was redeveloped. Following the 1997 review, the survey was relaunched from April 2000 with a different design. The relevant development work and the changes made are fully described in the *Living in Britain* report for the 2000-2001 survey.

Following its review, the GHS now consists of two elements: the continuous survey and trailers. The continuous survey is to remain unchanged for the five-year period April 2000 - March 2005, apart from essential changes to take account of, for example, changes in benefits and pensions. The GHS has retained its modular structure and this allows a number of different trailers to be included each year, to a plan agreed by sponsoring government departments.

Further information about the GHS can be found on the ONS (Office for National Statistics) website at: http://www.statistics.gov.uk/lib2001/about2.html
Funding Source: The main sponsor is the ONS as well as governmental departments bodies.

- *The General Social Survey (GSS)*

The GSS is a nationally representative survey of the US population, conducted annually almost every year since 1972. Being the product of an admirable, early, act of far-thinking investment by an inter-disciplinary team of social scientists, the GSS meticulously replicates both questions and question sequences in successive surveys, in order to allow researchers to track change and thereby inform public policy. It covers each year a broad set of core issues, and other "bolt-on" modules devoted to particular topics. A work orientations module was included in 1989 and in 1997, while some basic employment data is included every year. Stratified random sampling methods are used nowadays, though sampling strategies in some early years used partial quota methods, which differed from random methods in complex ways. Since 1985, this survey has been part of the International Social Survey Project. The GSS sequence epitomises the enhanced material suitable for understanding social change, available to analysts and future historians of recent decades, compared to what is possible for historians of earlier eras.
Full details can be obtained from: http://www.icpsr.umich.edu
Funding Source: the main but not exclusive source has been the National Science Foundation.

- *The German Socio-Economic Panel (GSOEP).*

The GSOEP is a nationally representative panel data set of individuals and households residing in Old and New Federal German States. Respondents are interviewed once a year. The original sample, selected following a stratified random sampling procedure, was first interviewed in 1984. New members are each year added through children attaining age 16, new households formed by members splitting from their "old" household. Members leave through death and through sample attrition. The panel is also periodically refreshed with new samples, including a new East German sample after re-unification. Successive waves are thus designed to be representative of the relevant population in Germany. In 2001 there were approximately 12,000 households and

22,000 persons in the panel. Questionnaires include labour market histories since leaving education. Labour market information is collected every year, and job characteristics data every few years.
Full details are at: http://www.diw.de/english/sop/
Funding Source: The German Science Foundation.

- *International Social Survey Programme (ISSP)*

This programme is not one particular survey, but a network that brings together national surveys in many different countries using comparable methodologies and a set of core questions. For example, in the United States the data come from the General Social Survey (see above). The objective is to support international comparative research in the social sciences. Each year the core questions are supplemented by one or more additional modules. In both 1989 and 1997 the added module was on the theme of "work orientation". Identical questions permit comparisons for 8 countries that were surveyed in both years.
Details are at: http://www.issp.org
Funding Sources: various national sources

The original data creators (other than Francis Green in the case of the 2001 Skills Survey), depositors, holding archives and founders of the above data sets bear no responsibility for the analyses and interpretations presented in this paper.

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