

Ionian conference, May 2000, Theme 2: Technology and employment.

What shapes working conditions? Comparative historical evidence for manufacturing.

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Abstract: The past decade has seen much discussion about the scope for national distinctiveness in employment relations in the context of the globalisation of corporations and markets. This paper employs historical data on aspects of working conditions in eleven nations' manufacturing sectors to comment on the impact of supposedly intensifying global pressures. With no historic convergence of working conditions evident in a statistical analysis, the paper turns to a preliminary econometric analysis to afford some purchase on the conditions which underpin continuing national distinctiveness. The results suggest that cross-national variation in the exposure of employees to managerial prerogative, whilst being far from the only influence, has played a substantial role in the shaping of working conditions.

I would like to thank Yorgos Chouliarakis, Esra Erdem, Francis Green, Christine Greenhalgh, Anthony Ferner, Ken Mayhew, Theo Nichols, Chris Rees, Margaret Stevens, Hannu Tanninen and Sarah Vickerstaff for their comments on previous versions of this paper, which has been revised since its presentation at the British Universities Industrial Relations Association Conference 1999. The research project underlying the paper was developed under an ESRC Research Studentship at Warwick's Department of Economics with the supervision of Keith Cowling.

Globalisation and the last gasps of purposeful collective action.

In US academic circles in the 1950s there was much discussion of convergence amongst industrial societies. There seemed a widely held belief that the US represented the ideal typical mature industrial society towards which all others must tend (Crouch and Streeck, 1997). Kerr et al's (1960) pluralist analysis famously emphasised the role of ubiquitous technological and economic forces, arguing that there was a 'logic of industrialism' which dictated the path of development of all industrial societies. Bell (1960) was already proclaiming 'the end of ideology'.

Some forty years on, discussions of employment relations are often framed by suggestions of an intensification of international competition in product markets, an acceleration of the diffusion of universal best practice by increasingly integrated multinational corporations, and an integration of capital markets (e.g. Bølinger et al, 1994; Crouch & Streeck, 1997; Ferner & Hyman, 1998). Perhaps relatedly, the end of state socialism and the general dominance of the practical philosophy of neo-liberalism seem of relevance to analysts' impressions of workplace change (Crouch & Streeck, 1997).

With the play of global economic forces emphasised in the media and in much scholarship, it is tempting to believe that advanced industrial nations are now rapidly heading towards a societal and cultural homogeneity with real permanence, just as the 'logic of industrialism' of the 1950s suggested. Accordingly, there is now a substantial body of opinion that employment relations in advanced industrial societies are converging in important respects, whether the erosion of institutions or the hollowing out of those institutions that endure is emphasised (e.g. Crouch & Streeck, 1997; Kochan et al, 1997). With the apparent waning of the distinctiveness of national systems once stressed by, for example, Lane (1989), there appears less space than ever for the political in the political economy of capitalism. This paper seeks to contribute to contemporary assessments of the strategic potential of national governments and labour movements (Regini, 1992; Crouch and Streeck, 1997), and to the underlying concern of scholars with

the space for agency within the generic structures of modern capitalism (see, e.g., Hyman, 1972; 1987; 1994).

Aggregate gauges of working conditions.

Whilst there has been much debate about the extent and significance of indications of convergence in employment relations across national borders, scholars have struggled to offer any comprehensive sketch of cross-national comparative workplace developments, and thus to furnish a broadly based assessment of the impact of global pressures. Manufacturing represents a huge critical case in the assessment of the space available for societal distinctiveness in employment relations, constituting as it does the core of the exposed sector of national economies. This paper makes use of carefully standardised official statistics pertaining to aspects of working conditions in the manufacturing industries of eleven advanced industrial societies to explore comparative historical workplace experience over the period 1960-1995.

Working conditions are self-evidently central to the experience of paid employment – to the well being of employees under work relations. The amelioration of working conditions has been an enduring theme in efforts at work humanisation, although in recent years such considerations have been eclipsed by employers' focus on work organisation and flexibility. Nonetheless, as aspects of the quality of working life, working conditions may well be considered a key outcome of the process of industrial or employment relations. They must bear on any notion of social productivity aiming to take account of the personal and social costs of production and not merely the conventional "bottom line" (c.f. Metcalf, 1989).

Academic discussions of developments in the humanisation of work usually draw on company level case studies, and make limited use of quantitative data. The use of official statistics in the core of research on working conditions is limited, with Wolfgang Streeck's (e.g. 1997) work the most prominent example within mainstream industrial relations of contributions relying significantly on such data. Scholars such as Theo

Nichols (1997) and the late David M. Gordon (1996) have, however, sought to use official statistics in a more thoroughgoing way to inform understanding of national and cross-national developments. There does seem a role for such work, taking nations as the unit of observation, in providing a sketch of the situation in the typical workplace of a country, even though such depictions inevitably gloss over the variation in experience within national borders which case and survey work evidence.

The present study was prompted by the research methods of Theo Nichols and David Gordon in particular. It represents an attempt at historical comparative work using selected official statistics. Naturally, the availability of official statistics, both across countries and over time, necessitates a pragmatism in the selection of indicators of workplace developments. Within the confines imposed by the available statistics, it was however possible to collate comparable series which described relatively unambiguously significant aspects of the working conditions of employees. The study relies on two indicators of working conditions – average annual hours actually worked and the rate of incidence of fatal injury – in eleven countries' manufacturing sectors.

In the selection of these two indicators, the issue of construct validity was paramount. Estimates of annual hours worked are very much preferable to weekly hours as gauges of the time spent at work, taking into account as they can vacations, sickness absence, overtime worked, parental leave and other personal leave, and even study leave where appropriate (see Bosch et al, 1994). The records of fatal injuries at work on which the incidence rates derived here are based seem vastly less vulnerable to varying national practices in the reporting and recording of injury than are the records relating to less severe injury (see Nichols, 1997).

The concern with the meaning and significance of the data compiled which informed the selection of the indicators was carried over into the painstaking task of collation, a process of exploration and substantiation drawing on a substantial array of national and international sources. The central issues were those stressed by Shalev (1978) in his discussion of official statistics on strikes – that of the precise subject matter

of the statistics and that of the comprehensiveness of the collection effort mounted by the agencies responsible in the various countries. These intricacies of meta-data were frequently extremely difficult to establish, so that the process often seemed akin to detective work. Country by country details of the collation effort with regard to all the data featured in this paper are available from the author on request.

The standardised historical and cross-national statistics derived provide an overview of key aspects of working conditions in nations' manufacturing sectors as entireties, allowing systematic cross-national comparison across the manufacturing sectors of each of the G7 nations, three Nordic countries and Austria. The historical dimension of the statistics allows us to reach back and trace comparative developments right from 1960, the heart of the 'Golden Age' of post-war capitalism, through the resurgence of worker militancy and manifest crisis of the 1970s, and into the profitability recovery of the 1980s and 1990s. Since the figures relate to very well defined phenomena, and have been subject to extensive corroboration, this unique data field constitutes, in effect, an exemplary longitudinal survey of typical working conditions in the manufacturing sectors of a variety of institutionally distinct societies, albeit a survey of extremely limited scope. Its characteristics lend the data field a distinctive potential in the analysis of societal convergence and diversity, and in the exploration of influences on working conditions.

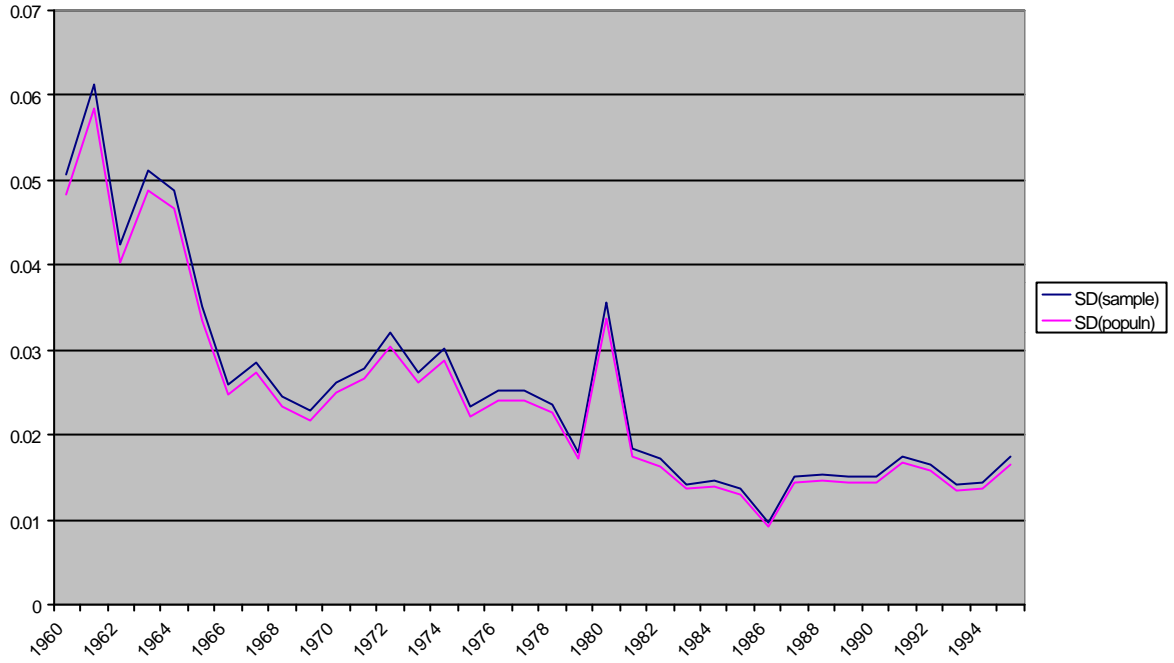
Societal convergence or enduring diversity?

Since the intention of the present paper is to overview comparative historical developments, rather than deal in detail with the experience of specific countries or groups of countries, the results of the statistical collation effort are shown in two figures in the appendix. These summary figures are offered as sketches of the general historical pattern of development. Broadly, taking the experience of the eleven countries as one, and talking over the long haul, casual inspection suggests a general tendency towards shorter hours and fewer fatalities – towards an improvement in working conditions. But the data allow further consideration of comparative historical developments.

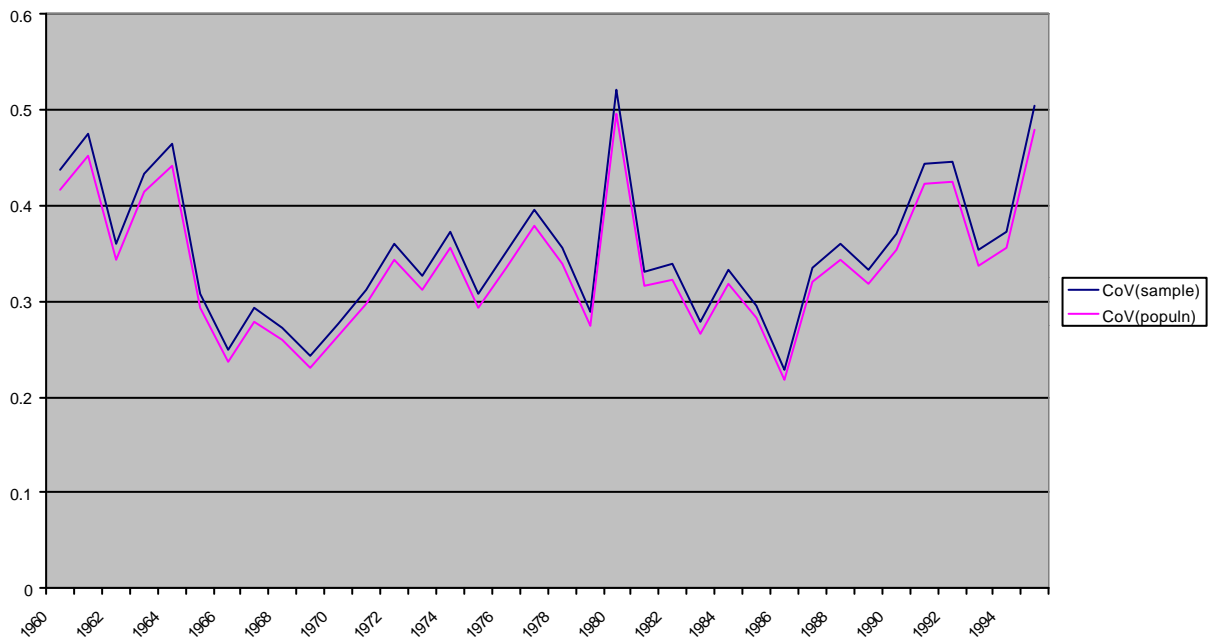
The comparative historical data collated for this study allow a statistical assessment of the evidence of societal convergence on the basis of a partial, but nonetheless substantial, characterisation of working conditions. Two statistical measures of spread are used here to characterise historical developments in the cross-national variation in experiences of working conditions: standard deviations and coefficients of variation. These measures of cross-national diversity are calculated for both injuries and hours for each year of the 36 year period spanned by the data field. The standard deviation (SD) is a familiar gauge of the spread of data. The coefficient of variation (CoV) is simply the SD divided by the cross-national mean of the indicator in the corresponding year, being thus a standardised SD which takes account of the average magnitude of the data analysed. This latter standardised gauge of the relative spread of the data around the mean is used commonly in the assessment of income convergence in research on economic growth, an area of study in which the series analysed tend to be strongly trended.

The statistical analysis of convergence with these two gauges of cross-national diversity has the advantage of being robust to any enduring national idiosyncrasies in the collation of statistics on injuries and hours which have not been ironed out by the extensive efforts to standardise the data highlighted above. The historical development of the gauges of cross-national variation in working conditions is represented in the charts below, the two on the first page pertaining to the incidence of injuries and the two on the second to average annual hours worked. For completeness, each chart shows the pattern of development of the gauges of spread with the eleven countries under study here treated as both a sample and as a universe for the purposes of the calculation of the standard deviation.

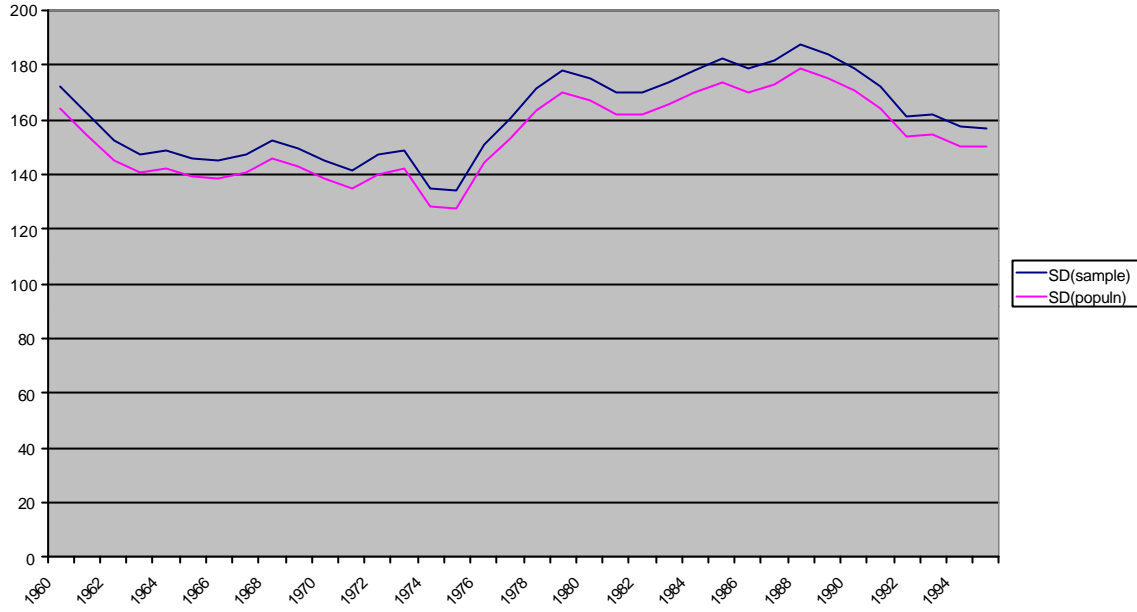
Standard deviation (SD) of rate of fatal injury



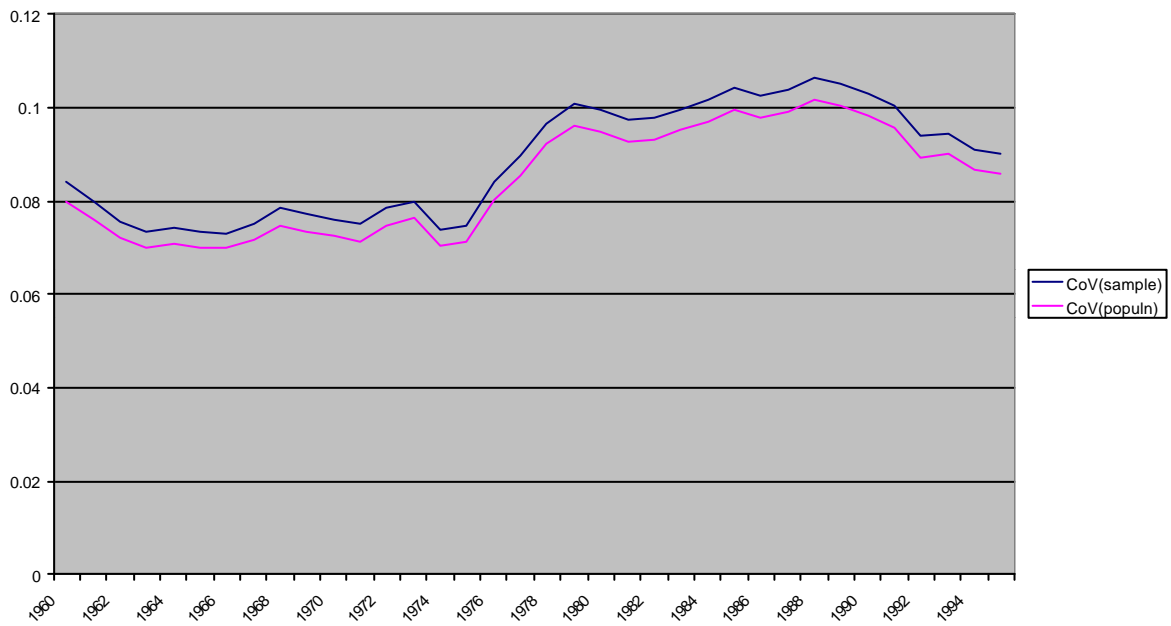
Coefficient of variation (CoV) of rate of fatal injury



Standard deviation (SD) of average annual hours



Coefficient of variation (CoV) of average annual hours



With regard to the experience of fatal injury incidence, the SD shows a rapid fall from 1960 to the mid-late 1960s, and thereafter a more complex development. Though there seems some long-run tendency to reduction in the succeeding years, there is no suggestion of any reduction in the most recent decade, from the mid-1980s to the mid-1990s. The movement of the CoV suggests no long run tendency to reduction, and indeed the measure shows a marked upturn from the mid-1980s to the mid-1990s. Taking into consideration the patterns of development of both the SD and the CoV, it seems fair to say that any tendency to uniformity in national experiences over the long haul is down to a broad long-run tendency for fatal injury incidence to approach zero. Moreover, there is no suggestion whatever of convergence of injury experience in the period from the mid-1980s to the mid-1990s, during which globalisation is alleged to have been intensifying apace.

With regard to annual hours, the SD shows a fall to the mid-1970s, the period of crisis, and thereafter a steeper rise to a plateau in the mid-late 1980s before falling back in more recent years. Overall, though, there is no suggestion of a tendency to a reduction over the long haul. The CoV shows less accentuated movement around what seems, if anything, a tendency to a greater magnitude over the long haul. Taking both measures of spread into consideration, there is no evidence of any convergence of hours over the long haul, with, for example, the variation in hours by either measure greater in the 1980s than it was in the 1960s. But, in contrast to the experience with respect to injuries, there is some indication of a convergence over the course of the more recent years from the late-1980s to the mid-1990s, which is consistent with recent stresses on intensifying globalisation. This recent convergence still left the variation in hours at a level greater than that experienced through the 1960s, however, whichever measure of spread is taken. This underlines the limits of the recent convergence in hours apparent.

Thus the statistical assessment of the historical pattern of working conditions in these countries confirms what a cursory glance at the plots of the raw data suggests, that to the extent that convergence has occurred, it is uneven and limited. No relentless and

ongoing homogenisation of working conditions is evidenced in the data. Of particular interest, developments in the last years spanned by the data, when the play of global forces is alleged to have hugely intensified, exhibit no historic collapse of national distinctiveness remarkable in comparison with earlier junctures. The continuing cross-national diversity in experiences of working conditions raises the question of the conditions which might underlie national distinctiveness.

What might underlie national distinctiveness?

Enduring cross-national variation in working conditions implies that there are limits to the operation of ubiquitous technological or economic forces. Kerr et al's (1960) 'logic of industrialism' does not determine working conditions, even in the 1990s. The enduring distinctiveness might simply be attributed to differing national cultures. In whichever way they are interpreted, however, conjectures of this sort are unsatisfactory. On one interpretation, there is a parallel to a form of explanation parodied by the historian E H Carr. Carr (1961) highlights the inadequacy of an explanation of the well-known tendency of milk put to boil in a saucepan to boil over which rests on an assumption that milk has a peculiar propensity to boil over. Such explanation is entirely vacuous.

The insistence that comparative historical differences in working conditions have their origins in culture might otherwise be interpreted as a simple assertion that any immediately puzzling patterns in social reality must necessarily have resulted from innate and immutable, though unspecified, national characteristics. The Panglossian view that societal differences must result from some optimal aggregation of active individual choices has in many respects a similar flavour. Both conjectures immediately attribute the basis of variation to a residual category, foreclosing further analysis with an appeal to meta-theoretical presumption. No opportunity is afforded for the meta-physical to be pushed back, and the rationale of social scientific enquiry is effectively undercut.

The possible roles of ignorance and uncertainty, ideology and institutions, suggest that there may be much to gain for social researchers in seeking to unpack societal settlements a little. It seems worth investigating the influences on working conditions further, considering a little more thoroughly how and where ‘culture’ or ‘choice’ might enter. In attempts delving deeper into the origins of comparative historical developments in working conditions it is not unusual for scholars and commentators to refer to the role of the political or ideological climate. Those more conscious of, or comfortable with, the influence of Marxist analysis on their thought allude to the significance of the balance of social forces, or of the balance of power in civil society (see e.g. Stephens, 1979; Ferner and Hyman, 1992; Nichols, 1997).

Allusion to what are essentially class forces may well seem out of place in the modern Anglo-Saxon world, often characterised as it is as being devoid of distinct, let alone contradictory, interests. This paper seeks in particular to investigate the relevance of the relative strength of labour to national developments in working conditions, the implicit suspicion being that those who deny its role gloss over much of the employment relations action in contemporary societies. Panel econometric methods can be brought to bear, providing only that quantitative indicators of the balance of social forces can be identified.

Operationalising the relative strength of labour

Korpi’s (1977; 1983) notion of the ‘power resources’ of labour, the resources on which employees can call to sanction their employers and to shield themselves from harm, provides a starting point for the operationalisation of the rather nebulous concept of the balance of social forces. The specific term has common currency in debates around social corporatism, labour movement theory and social democracy. US scholars with similar interests in cross-national comparative developments tend to emphasise the relevance of an individual’s exposure to the labour market, using the concept of the ‘cost of job loss’ faced by an employee (e.g. Gordon, 1996). Although European social

democratic theorists' use of the term generally emphasises the collective resources of organised labour, such scholars generally do acknowledge the relevance of the resources on which individual employees may call, but stress the relevance of this for employees preparedness to enter into (or not undermine) collective action (e.g. Korpi, 1983). Nevertheless, the power resource notion can reasonably be used to encompass the concept of the 'cost of job loss' which has emerged in the US.

Efforts at the quantitative characterisation of the power resources of labour confront the profoundly problematic nature of attempts to pin numbers on specific aspects of the statutory frameworks of collective bargaining relating to, for example, employment security, the right to strike, employee participation and the work environment. Thus, effort was concentrated not on such specific aspects of labour regulation but on the more readily enumerable broader context of employment relations which relate to the relative strength of labour. Several series were prepared.

Whilst obviously problematic, aggregate union density is a widely accepted proxy of the organisational resources and societal influence of the labour movement (Stephens, 1979; Cameron, 1984; Visser, 1992; Crouch, 1993; Franzosi, 1995). Stephens (1979) in particular notes the cross-national comparative association between the extent of labour organisation, the coherence of the labour movement, collective bargaining centralisation and social democratic participation in government. Cameron's (1984) analysis suggests similar connotations, and Crouch (1992; 1993) suggests the relevance of at least some. Many other contributions allude to these and other historical associations between the nature and effectiveness of organisation with density in the contexts of particular nations (e.g. Franzosi, 1995). The potential significance of density as an indication of the widespread membership which can constitute a barrier to employers playing one workforce off against another within their national borders might also be noted.

Alongside union density, a series for the share of manufacturing in total employment was derived, the intention being in part to capture something of the priority afforded conditions in manufacturing industry due to its sheer weight in the workplace

experience of employees in the countries under study. The share of manufacturing employment might in addition capture something of the coherence of the union movement, regarded as critical by numerous scholars (e.g. Stephens, 1979; Crouch, 1993), which is not captured by union density. It is also conceivable that, in as far as manufacturing industry is something which union movements struggle to preserve with greater or lesser success, the relative importance of the manufacturing sector constitutes something of a gauge of the institutional entrenchment of unionism, whether in law or in industrial relations practice.

In recognition of the potential significance of public social protection to workplace developments, several alternative series relating to nations' social security efforts - the shares of social expenditure in GDP - were collated from ILO and OECD sources. Whilst these expenditure based indicators have none of the subtlety of recent attempts to construct indicators of social rights (e.g. Esping-Andersen, 1990), they do provide rough and ready quantitative indicators of social commitment to the welfare state. ILO sources allow only the construction of the aggregate social protection effort. In contrast, OECD sources allow the derivation of social expenditure shares by three broad programmes – spending on health, on the aged, and on the rest of the population.

With much difficulty and a deal of estimation, series for the proportion of the total workforce comprised by non-naturalised migrants were also prepared. The intention was to investigate the relevance to working conditions in advanced industrial societies of the presence of a peculiarly exposed segment of the workforce (see e.g. Goldthorpe, 1984; Regini, 1992; Berggren, 1994). Being a non-national in the country where one is employed seems to have a particular significance, beyond that of ethnicity or foreign birth. Non-naturalised migrant workers are 'aliens' to the countries which host them and in UN terminology. This term is used here to highlight their vulnerable status.

Series for the rate of unemployment as cross-nationally and historically comparable as existing ILO, OECD and BLS work permits, were also prepared. Series for the employment rate were also collated, in an attempt to get at some of the subtlety of

labour market conditions missed by unemployment rates. These two facets of labour market conditions are at once indicators of labour's broad power resources and conventional economic indicators of prevailing demand conditions.

Each of these crude and partial indicators of the broad power resources of labour, whether individual or collective, in the national political economy should be regarded more as imperfect expressions of the situation of employees than as supposed determinants of working conditions, presumed necessarily of importance in their own right.

The political, the economy, and working conditions: the panel estimations.

Multiple regression analysis is used here as a tool for the exploration of statistical relationships. As Korpi (1989) stresses, the empirical, or event, regularities revealed by the use of econometrics do not speak for themselves, but rather promise a basis for the interpretation of comparative historical developments. The panel econometric analysis of working conditions presented here employs more conventional economic indicators alongside the quantitative indicators of aspects of the national political economy which relate to the relative strength of labour. Series for capital accumulation in manufacturing, for the share of profits in value added in manufacturing, and for the growth of domestic demand were intended to express potentially relevant aspects of the politico-economic situation. The appendix features summary statistics on the variables employed in the panel analysis. Note that for convenience the rate of incidence of fatal injury was expressed per 100000 employed, rather than per 1000 employed as it was for the analysis of convergence.

The 36 annual observations over 1960-1995 available for each of the 11 advanced capitalist countries for which data was collated yield a good sized panel for the purposes of econometric exploration – the data field features 396 observations on each variable. To deal with the problems of spurious relationships which readily arise in estimations

involving series which are (locally or globally) time trended, and which seem a particular challenge in panel analysis, 35 annual dummies were introduced. This is a simple method with which to cope with the non-stationarity of data which is the focus of time series econometricians, but has the merit of being readily comprehensible. The inclusion of this set of dummy variables implies that the econometric investigation is of the societal characteristics associated with the relative state of working conditions evidenced in the eleven nations for each year of the 36 year period. The estimating equations thus reveal the relations between the indicators of the political economy and *comparative* performance. The effective partitioning of the data field entails a very stringent test of the relevance of the political economy to working conditions.

The panel analysis employs random effects and fixed effects estimators. The pursuit of random effects (and even more fixed effects) estimation, rather than simple OLS on a pooled panel, provides some guard against the potentially distorting influence of any enduring national idiosyncrasies in the statistics on working conditions which remain features of the indicators derived. To some extent then, the econometric results are shielded from the implications of any societal idiosyncrasies of statistical collation missed in the course of what was a very extensive data collation effort just as the statistical analysis of convergence was so shielded. In the event, the similarity in the results of random and fixed effects estimation provides some re-assurance that remaining idiosyncrasies of this kind are limited, as well as offering some evidence of the validity of the model specification. In this context particularly, the country specific effects produced by fixed effects estimation are of some interest.

The results tables presented below are not intended to be exhaustive in their representation of the econometric results, but rather to indicate their flavour. Since the regressors are regarded here as crude indicators of the broad political economic situation rather than as self-standing potential causes of workplace developments, an unusually simple approach to estimation was followed. There was no experimentation with lag structures or with interaction effects, despite the potential afforded by the degrees of freedom available. In an attempt to avoid becoming embroiled in a data mining exercise

which would tend to overplay the self-standing significance of the politico-economic indicators, as well as rendering interpretation extremely problematic, the normal testing down approach was rejected. Moreover, only the relevance of only those variables found in preliminary explorations to have an independent relation to comparative injury incidence - variables which turn out statistically significant when entered in a regression alongside only the annual dummies - was pursued further. The tables thus feature only those variables found to be independently related to injury incidence in this way. In effect, the approach to estimation adopted represented an attempt to identify broad stylised facts in comparative working conditions.

The tables report the results of various specifications, showing the coefficients on the variables and, in brackets beneath these, the corresponding t (or z) values. As is normal, values approaching two suggest the statistical significance of a variable. An attempt has been made in the selection of the specifications shown in the tables to give an indication of the precariousness or robustness of the statistical relation of the working conditions indicator to each of the variables. For the most part, the random effects estimator is used, with the fixed effects estimator used for the preferred specifications presented as summaries of key relationships in the last column of the table. In practice, the results of the random and fixed effects models were generally very similar, so that the Hausman specification test shown only in the final columns would be passed for most of the specifications presented in the table. But it is the fixed effects estimate which features country specific effects – estimates of a residual category pertaining to the enduring relevance of nationhood to comparative performance outwith the statistical relations between the particular variables included in the specification and working conditions.

Panel estimates of correlates of comparative fatal injury incidence in manufacturing (per 100000 employed).

Specification	1	2	3	4	5	6
	RE	RE	RE	RE	RE	FE
Union density, %	-0.063 (-4.645)		-0.052 (-4.884)	-0.065 (-5.016)	-0.061 (-4.033)	-0.074 (-5.076)
Share of manufacturing employment in total, %	-0.388 (-8.886)	-0.429 (10.186)	-0.335 (-8.588)	-0.371 (-8.727)	-0.369 (-8.951)	-0.421 (-9.637)
Share of alien labour force in total, %	0.523 (4.958)	0.602 (6.204)	0.398 (4.908)	0.480 (4.826)	0.445 (4.661)	0.510 (4.594)
Share of profits in manufacturing, %		0.084 (3.272)	0.117 (4.848)	0.070 (2.571)	0.096 (3.873)	0.072 (2.793)
Rate of capital accumulation in manufacturing, % pa	0.171 (2.819)			0.110 (1.690)		
Social security effort (ILO), % of GDP		-0.133 (-3.442)			-0.008 (-0.187)	
Health spending effort (OECD), % of GDP						-0.510 (-3.170)
Employment rate, %			-0.027 (-1.041)			
Annual dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared (adjusted, overall)	0.5889	0.5739	0.6718	0.6282	0.6379	0.5898
Hausman specification test						OK
Country specific effects:						
USA						-3.652
Canada						-2.105
UK						-1.824
France						-1.529
Norway						-0.134
Japan						-0.646
Sweden						0.954
BRD						1.522
Finland						1.598
Austria						2.083
Italy						3.701

As regards the rate of incidence of fatal injuries, the results demonstrate relations to several of the indicators of the shape of the broad political economy, though the more conventional economic indicators were of limited relevance. The table gives some

indication of the robustness of the statistical associations uncovered and a feel for the results in general. Comparatively low rates of fatality were robustly associated with greater rates of union density, a greater share of manufacturing employment in total employment, a smaller proportion of non-naturalised migrants ('aliens') in the workforce, and a lower share of profits in manufacturing value added. Gauges of a more determined social expenditure effort show some relation to injury incidence, though the relevance of the broadest measure tends to be swamped by that of union density, with which it is closely related (compare specifications 2 and 5).

The relation of comparative injury incidence to the preponderance of aliens deserves further comment. The strong relation suggests that the presence of a particularly vulnerable segment of the workforce was of relevance to injuries, but the econometric results cannot address the issue of whether this reflects deaths sustained solely by the alien workforce, or death suffered across the workforce as a whole. The fragmentary evidence available on the relative injury experience of migrant workers, particularly taken alongside the abundant evidence of their experience of poorer working conditions, suggests that it is they who bear the brunt.

The evidence that fatality incidence was greater where profitability was higher also deserves further comment. The non-robust relation of fatalities to the indicators of the growth in demand in the domestic economy and the employment rate (exemplified by specification 3) suggest that the relation of injury incidence to profitability expresses more than simply the relevance of the pressure of orders. But to say that this relation evidences class struggle is, in a very real sense, simply to re-label the tension between working conditions and profit apparent in the comparative historical data here. The robustness of the relation, specifically its persistence in the presence of the gauges of the broad power resources of labour (of Korpi's (1983) 'democratic class struggle') in the estimating equation, suggests that the relation might be underlain by a comparative historical tension between specific legislative protections and profitability, or perhaps between workplace level anti-capitalist sentiment and profitability.

Interestingly, the relation of injuries to the rate of accumulation does seem to express a *little* more than the relation of injuries to profitability, with which accumulation is closely linked (compare specifications 1 and 4). New plant may be perilous for employees used to different equipment in their place of work. It does also seem likely that to some extent the relation of injuries to the rate of accumulation is an expression of a relation between injuries and the pressure of orders.

The summary specification shows the results for those variables whose relation to injuries is most robust. Health spending effort is included in this specification not to suggest that this form of expenditure has a particular role in shaping injury incidence, but merely to emphasise the statistical relevance of social spending whilst also demonstrating that of union density.

Turning to the values of the coefficients on the nation dummies implicit in fixed effects estimation, the largest negative country specific fixed effects evidenced are those in Canada, the UK and the USA. The models presented thus substantially overstate the incidence of comparative fatal injury – they suggest that there should be more fatalities given the power resource indicators derived for these countries. In this sense, the results suggest that Anglo-Saxon labour punches above its weight. This seems likely to reflect the purchase of a particularly assertive workplace trade unionism in these countries, even before the health and safety legislation of the 1970s buttressed the position. To some extent, the Anglo-Saxon dummies may also express the apparently exceptional burden of non-production employees carried by production workers in these countries (see Gordon, 1996). A particularly large segment of the manufacturing workforce may thus be shielded from risk in these countries. There is also the possibility that a distinctive tradition of employer paternalism has, of itself, shaped shopfloor developments in the Anglo-Saxon world. There seems limited reason to believe that the models' overstatement of the severity of the fatal injury experience in these countries simply reflects idiosyncrasy in occupational fatality reporting systems, although the very particular nature of data collation in Britain is some cause for concern.

The largest positive country specific effects established are those for Italy, Austria and Finland. The models thus substantially understate the severity of fatality incidence in these countries. In the light of the relevance of cross-border migration to injury experience, the Italian dummy may express the extent of *internal* migration neglected in the quantitative proxies employed in the panel analysis. Equally, the fatal injury incidence rate derived for Italy may be bolstered somewhat by the consideration in Italian occupational fatality statistics of the very large number of self-employed at work in Italian manufacturing, given the internationally evidenced tendency of the self-employed's experience of fatal injury to be more severe. The models' underestimation of occupational death in Austria seems likely to reflect the comparatively weak workplace presence of unions under what is widely regarded as a highly centralised system. The significance of forest based manufacture, internationally perilous as it is, in Finnish manufacturing may account for the models' understatement of occupational death in Finland on the basis of the power resource indicators.

Panel estimates of correlates of comparative average annual hours of work in manufacturing.

Specification	1	2	3	4	5	6
	RE	RE	RE	RE	RE	FE
Union density, %	-1.473 (-2.893)	-1.431 (-2.670)		-1.218 (-2.230)	-1.245 (-2.389)	-1.050 (-1.885)
Share of manufacturing employment in total, %			-3.308 (-2.369)	-2.615 (-1.809)	-3.033 (-2.156)	-3.350 (-2.235)
Alien LF, %	-19.680 (-6.021)	-21.311 (-6.219)	-15.621 (-5.021)	-18.365 (-5.571)	-18.039 (-5.511)	-19.031 (-5.450)
Share of profits in manufacturing, %	3.156 (3.411)		3.176 (3.595)	3.228 (3.683)	3.207 (3.641)	3.192 (3.594)
Rate of capital accumulation in manufacturing, %pa	5.726 (2.571)		5.224 (2.362)	5.325 (2.433)	6.790 (3.217)	4.498 (2.062)
Social security effort (ILO), % of GDP	-7.690 (-4.967)	-7.650 (-4.766)	-10.933 (-8.715)	-8.592 (-5.568)	-8.907 (-5.810)	-8.027 (-4.933)
Growth of domestic demand, %pa	0.534 (0.355)					
Employment rate, %	2.091 (2.327)		1.738 (1.884)	1.712 (1.868)		1.574 (1.689)
Unemployment rate, %		-1.439 (-0.763)				
Annual dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared (adjusted, overall)	0.7448	0.6808	0.7188	0.7323	0.7271	0.7088
Hausman specification test						OK
Country specific effects:						
Italy						-146.423
Finland						-110.669
Sweden						-85.347
Norway						-66.392
France						-6.263
USA						8.272
Canada						33.714
BRD						40.221
Austria						66.598
UK						103.678
Japan						162.610

As regards average annual hours, once again the results show robust relations to several of the gauges of the nature of the national political economy, with conventional economic variables also showing up as of relevance to hours. Comparatively short hours

were robustly associated with greater union density and a marked social expenditure effort, conditions which are in any case closely related to one another (note the results for social expenditure in specification 3, in which density is excluded, compared with those under specification 4, in which density and social protection feature alongside each other). There is also evidence that hours tended to be lower where the manufacturing sector weighed more heavily in employment, with this variable approaching conventional significance even when density, with which it also is related, is included in the estimation (again, compare specifications 3 and 4).

Amongst the economic variables, there were robust associations of hours to both manufacturing profitability and capital accumulation. The tension between working conditions and profitability was thus once again evidenced, perhaps for the sort of reasons suggested above in the discussion of the results for fatal injuries. There was also a robust (positive) relation of hours to the employment rate. However, specification 2 exemplifies the failure of unemployment to come through strongly when placed alongside other variables, showing its irrelevance even when none of the other variables pertaining to demand conditions are featured. Surprisingly, the indicator of domestic demand also related quite poorly to hours, as specification 1 exemplifies. This may well be a result of the proxy's inadequacy – the relevance of orders and capacity utilisation may well underlie the relation of hours to the indicators of accumulation and employment, and perhaps even profitability to an extent.

The nature of the prominent relation of annual hours to the extent of the alien workforce is worthy of further comment. Shorter hours were closely associated with a greater preponderance of non-naturalised migrant workers. It thus seems that the presence of a distinctly exposed segment of the workforce may have served to allow the reduction of hours worked, at least as averaged across the national and non-national workforce.

The interpretation of the country specific effects emerging from the panel analysis of hours seems trickier than that of those emerging from the analysis of injuries. The suggestions here are a little more speculative. The models' overstatement of hours in Italy

implied by the large negative fixed effects may express a distinctively Mediterranean anti-capitalist spirit acting at some level to curtail the hours spent in paid employment. The overstatements for the Nordic countries seem likely to be related to the emphases of the well-articulated Nordic unionism on the humanisation of work and on the legislation this spawned. The models' understatement of hours in the Anglo-Saxon countries and most particularly Japan may express the greater workplace legitimacy of capitalism in these nations, a legitimacy which might be conceived as an individual work ethic. The understatement of hours in Austria seems likely to be related to the centralised nature and circumscribed agenda of the Austrian union confederation. The relatively large understatement of hours in the BRD is more surprising, and this finding is a little more sensitive to specification than the country specific effects reported for the other countries. However, results for the BRD do tend, quite generally, to suggest that, when regarded in cross-national comparative perspective, the German labour movement has not managed to punch above the weight implied by the broad quantifiable political economic context in which it operates, despite the strategic focus on hours in its humanisation campaigns.

Overall, the power resources of labour do seem of substantial relevance to comparative working conditions, whilst much of the cross-national variation evidenced by the historical data does remain unaccounted for. The weak relationship between working conditions and labour market conditions provides some evidence in support of Edwards' (1986, 280) argument, drawing on Emmett and Morgan's synthetic work, that workplace developments are partially insulated from external forces. But the 'semi-permeable membrane' does seem pervious to some environmental influences, with the results suggesting that aspects of the political economy do 'penetrate the walls of the factory', as Grunberg (1986, 503) argues.

The empirical tension between working conditions and profitability provides a specific suggestion that the broad brush econometric analysis misses much of the industrial and employment relations action. It seems more fruitful to seek to identify what

might underlie this comparative historical tension than to be satisfied with the suggestion that it expresses a free-floating, zero sum, class struggle.

Thermostats, thermometers and arenas of action: interpreting patterns in the past.

The statistical analysis reported in this paper suggests that in many respects societal idiosyncrasy persists. Much of this variety is left unaccounted for here. However, that variance accounted for in the econometric analysis suggests that readily quantifiable aspects of the broad balance of social forces are associated with historical cross-national comparative variation in experiences of working conditions. The pertinence of the quantitative indicators of the power resources of labour in their own right remains unclear – statistical associations between data categories do not immediately imply causal relations. There remains a danger of a mechanistic interpretation of statistical associations, of being too keen to make sense of the patterns in the past evidenced.

Korpi (1978; 1985) argues that the broad power resources of labour shape specific institutional arrangements and shade their operation, but at the same time acknowledges the role of these institutions in bolstering the power resources of labour, stressing the effect of specific institutional arrangements on interest definition and social identity. Many other authors emphasise the role of institutions, whether macro or micro in their character, in their own right (e.g. Fulcher, 1991; Ferner and Hyman, 1992). Such work suggests much space for interaction amongst aspects of the political economy. Union density may be inextricably related with the broad hegemony of social democracy. To take a more specific example, the social wage may at once signal the union movement's successful transfer of power from the industrial arena to the political under generalised political exchange and, simultaneously, both nurture organisation and facilitate mobilisation. The indicators of labour's power resources employed in the present study may perhaps best be interpreted as partial and imperfect expressions of bundles, or clusters, of political economic attributes and forms of social regulation, some of which they may of themselves help to nurture, and with some of which they may be bound in a process of dynamic mutual conditioning.

To some extent too, the quantitative indicators of the political economy may best be considered simple expressions of underlying influences situated deeper in the social structure, or of particular historical events. Certain conditions may, quite generally, nurture labour organisation, whilst a specific conjuncture of events may lead to the formation of institutional arrangements which then tend to be perpetuated. Stephens (1979) cites various cross-societal correlates of substantial early twentieth century unionisation, whilst arguing the critical role of a centralised employers organisation in forcing the hands of Swedish union leaders towards coherence in industrial relations.

Many of these possibilities can only be explored with rather different research methods (e.g. Stephens, 1979; Esping-Andersen & Korpi, 1984; Esping-Andersen, 1990; Skocpol, 1992). In Ragin's (1987) terms, 'variable oriented' analysis such as that presented in this paper needs to be complemented by 'case oriented' analysis, working at more than one 'middle range'.

Concluding remarks

The comparative historical evidence of this paper suggests that working conditions are not determined by ubiquitous global forces. Nor is it the case that better working conditions result from an unrestricted managerial prerogative. Whilst the analysis cannot pinpoint causal processes, it seems clear that the individual and collective vulnerability of employees constitutes a real impediment to the improvement of working life. The 'flexible' labour market thus has implications which are not commonly acknowledged by its proponents. In the immediate UK context, this is of obvious relevance to the issue of the nature of the state action required to realise the worthy penchants of New Labour. In the European context, the present evidence of the implications of employee vulnerability could inform assessment of the use to which the space for governmental action afforded by the EU might be put.

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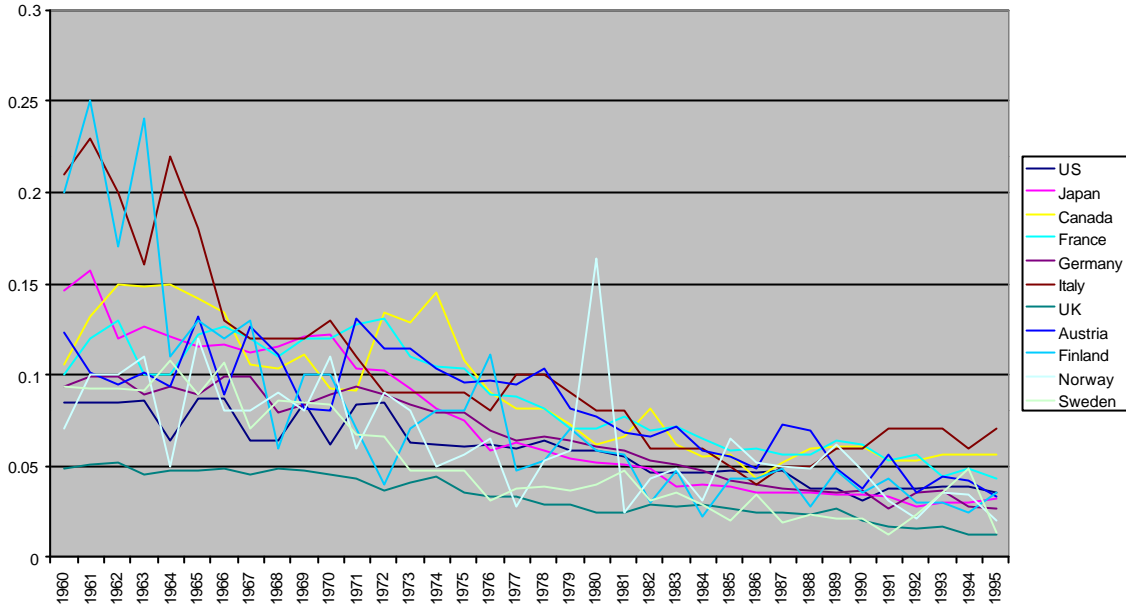
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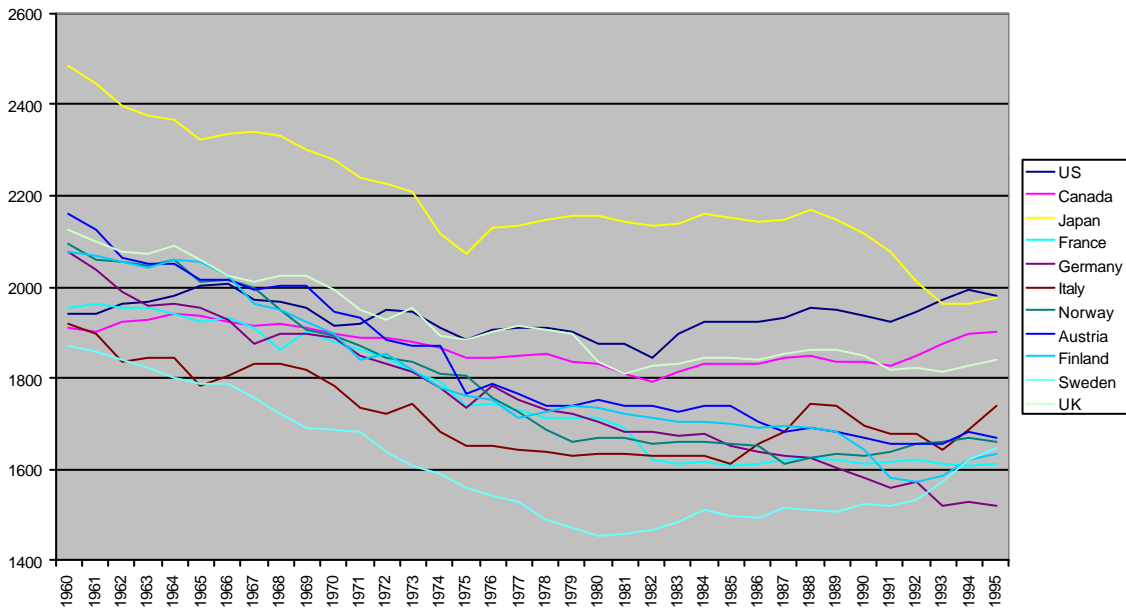
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Appendix

Rate of incidence of fatal injury (/1000 employed)



Average annual hours worked



Panel analysis: summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
injinc	396	7.168182	3.908433	1.2	25
hours	396	1835.803	189.7102	1453	2483
union	396	42.67955	17.49064	9.7	85.3
mfgsh	396	25.18712	5.211439	14.5	39.8
aliens	396	3.321641	2.484822	0	9.5
profit	396	28.98611	6.460092	10.7	49.8
accumn	396	3.934091	2.834806	-.3	19
demand	396	3.327273	2.861382	-7	12
empt	396	67.33056	5.943664	52.5	81.7
unempt	396	4.683081	3.209936	.3	18.2
iloss	396	17.51212	6.960191	4.6	39.2
oecdss	396	19.15523	7.090537	3.55	37.36
nhss	396	4.981919	1.536293	.4	8.85
agedss	396	7.595985	3.794208	.89	16.78
restss	396	6.541944	3.841986	.27	21.2
aged	396	12.4904	2.695493	6	17.8

Details of series collation are available on request.