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WORKING TIME AND EMPLOYMENT WITHIN
AN INTERNATIONAL PERSPECTIVE

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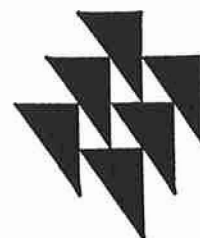
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Working Time and Employment within an International Perspective

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1. Introduction

In the vast majority of OECD member countries, working time and its relationship with employment is an important policy issue. The countries differ, however, over the particular emphasis given to one aspect of working time or another. In Europe and Australasia, there has been a strong recent collective bargaining interest in the relationship between cuts in the length of the standard workweek and employment. This has generated, after a rather long adjustment lag, a considerable growth in serious economic research work designed to analyse the employment, capital and other wider effects of cuts in the standard workweek. In Japan, by contrast, considerably greater stress has been laid on the importance of the expected length of the working lifetime and its relation to employment and other wider economic issues. Attention has focused particularly on the statutory age of retirement. Up to the year 2000, Japan has a larger projected growth rate of the economically inactive elderly population relative to the active workforce than any of its main trading competitor countries. Accordingly, the Japanese government and employers are seriously worried about the implications of far higher levels of social security funding for fiscal and monetary policy in general and for the labour market in particular. Interest in working time in the

United States embraces yet another set of issues; indeed, both the length of the standard workweek and the age of retirement are given relatively little policy weight. Nonetheless the relationship between cuts in working hours and the level of employment has been well researched in the US although the bulk of the work has concentrated on overtime, not standard, hours reductions. Unlike many countries, minimum US overtime premium rates are quite stringently controlled by government regulation and economists have been interested in finding out the hours - employment effects of changes in the minimum rates. Further, a disproportionate amount of attention has been given in the US to temporary layoffs and their relationship to employment, unemployment and hours of work.

Within the European countries themselves, other divisions of emphasis emerge. In Sweden, FRG and UK, for example, the relationship between part-time employment and total employment/unemployment is an important issue largely because of the highly significant growth of part-time female employment in these countries since the Second World War. As another example, FRG devotes rather more attention to short-time working than in most other European countries and, in fact, it finances short-time directly through its unemployment insurance system. Finally, the subject of shiftworking is given relatively large attention in France, the UK and Belgium given its quantitative importance and associated large collective bargaining interest in these countries.

This paper is designed to provide a useful background to the subject of working time and employment by presenting a fairly broad international picture of the most important

variables. Attention is concentrated on hours of work, full-time and part-time employment, short-time working and retirement. A more technical economic analysis of the relationship among these, and other, variables can be found in Hart (1986).

2. Hours and Employment

2(a) Long-run Trends

In his comments on two research papers dealing with the USA labour market, Heckman (1984) argues that a deficiency of the work concerns the fact that it concentrates too much attention on labour market fluctuations at the intensive margin - i.e. on average hours per employee. With reference to findings by Coleman (1984), Heckman shows that it is the variation in the stock of employment rather than in its utilisation rate that accounts for most of the variation in total hours. If this pattern of employment - hours variation is observed for other countries then, at least in an immediate sense, this serves to limit interest in the hours' dimension of fluctuations in labour services. It may also go some way towards explaining why, unlike in the papers discussed by Heckman, an overwhelming proportion of labour market and related research deals with labour either in terms of the stock of employees or as total hours without differentiating between stock and utilisation components. Heckman's US observation does not, however, hold universally.

Figures 1 and 2 show, respectively, the long-term employment and hours trends during the period 1950-1983 for five important OECD economies. In a number of dimensions, the contrast between the USA on the one hand and France, Japan, FRG and UK on the other is quite stark. As far as the stock of employees is concerned, the USA displays large cyclical fluctuations around its trend while the other four countries exhibit a much smoother employment path. As for average annual hours per worker, the USA has experienced remarkable stability over the entire period, in contrast to the patterns elsewhere. For example, Japanese average hours grew significantly up to the beginning of the 1960s followed by a long decline until the middle 1970's, from which point some systematic growth has recurred. The other three countries have shown persistent and significant declines in average hours, especially after the early 1960s. Other features do not divide nicely into a USA/elsewhere dichotomy. For example, France, FRG and UK exhibit a relatively stagnant employment path over the entire period in contrast to both the USA, with a modest trend growth, and Japan, with relatively high trend growth.

The method employed by Coleman (1984), to divide the deviation from trend in total hours (Nh) into its workers (N) and average hours per worker (h) components, is employed for the five countries shown in figures 1 and 2. The results, for the period 1970-1983, are given in table 1. The general finding by Coleman for the USA holds here. Thus, the percentage deviations from the Nh -trend in a typical year are dominated by the N - rather than the h -deviation. In general, for all countries except Japan, the N -deviations are, on average,

Figure 1 Numbers of workers in manufacturing industry 1950 - 1983

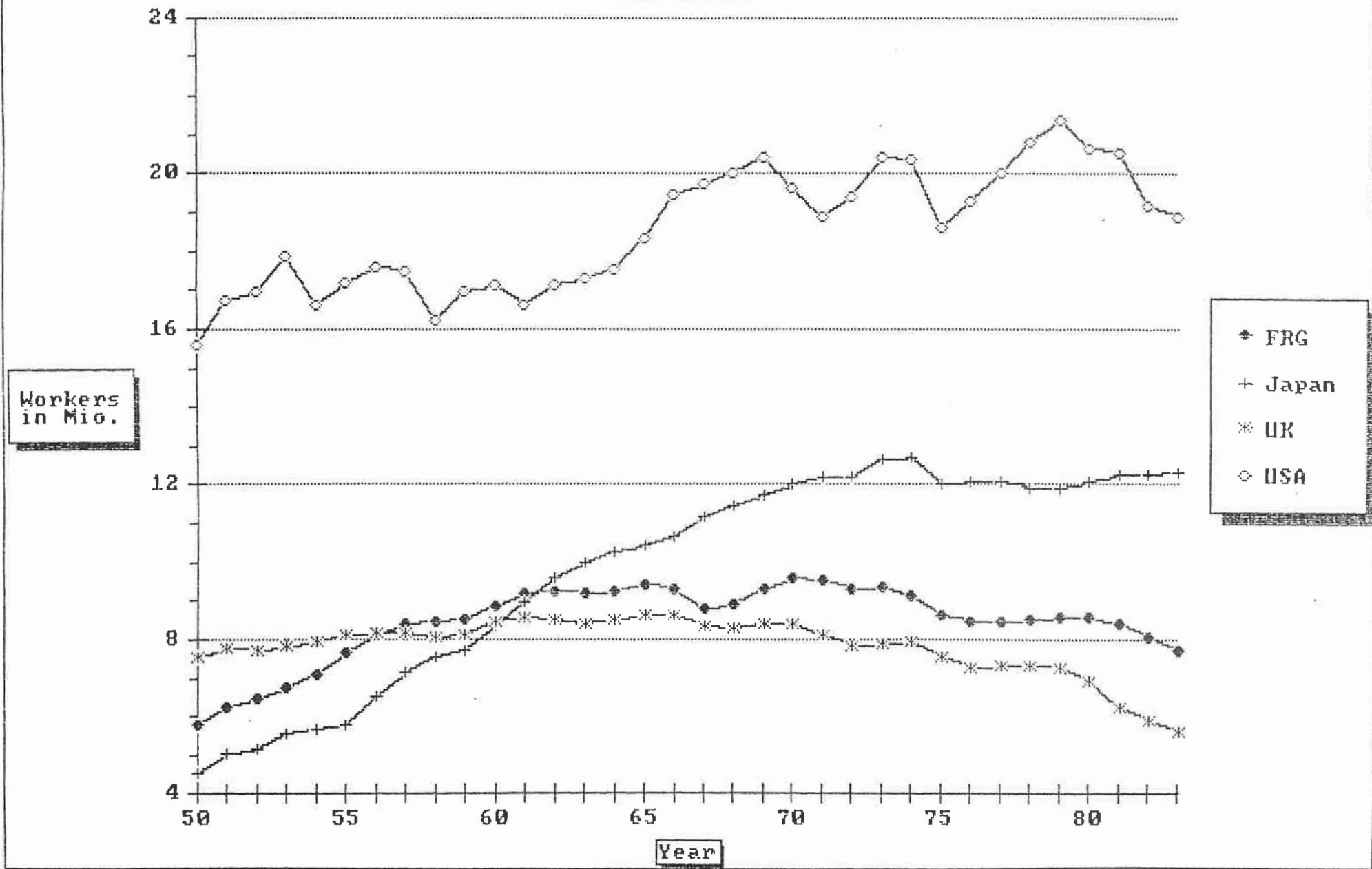


Figure 2 Average annual hours per worker in manufacturing industry 1950 - 1983

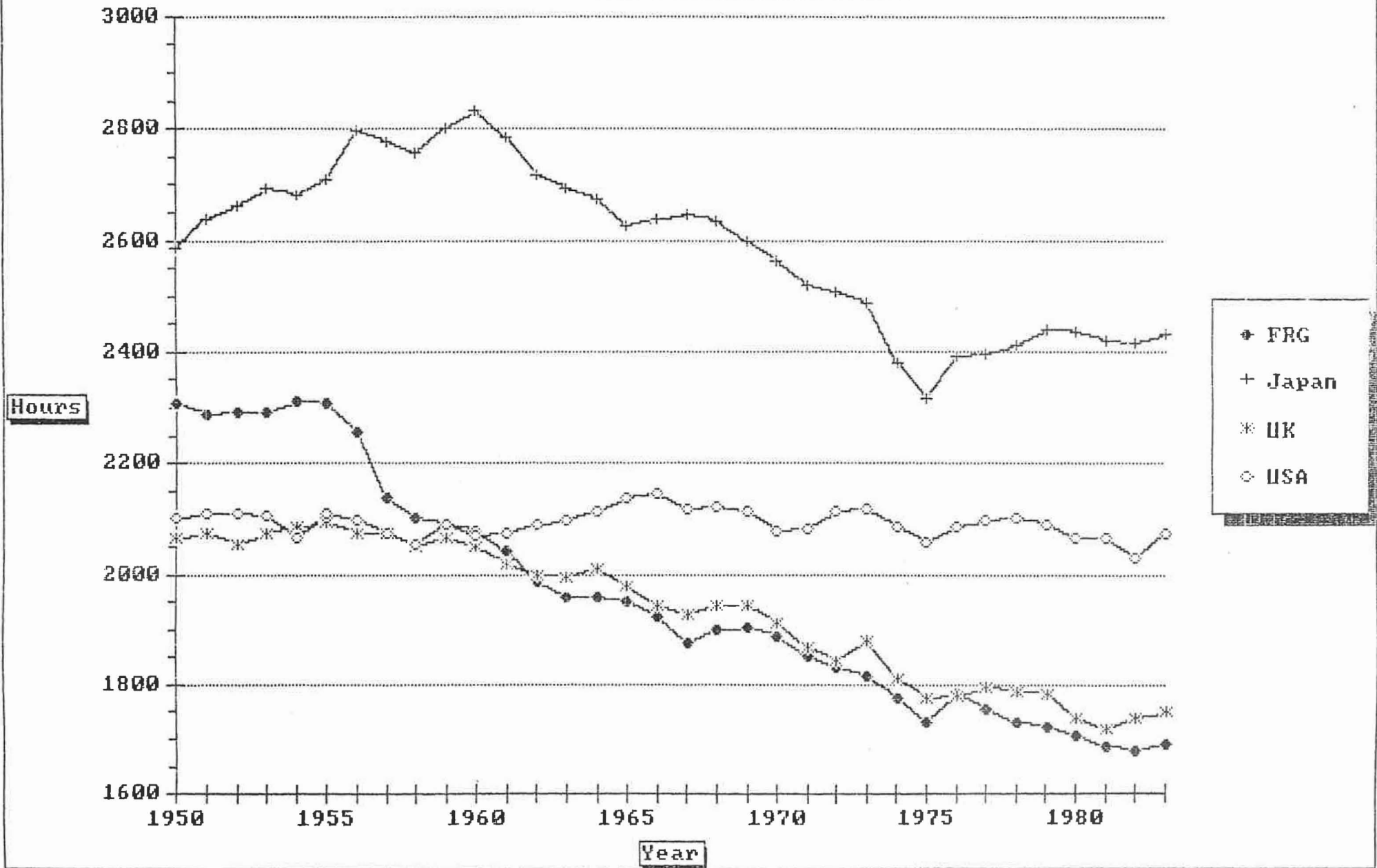


Table . 1

Fluctuations in Average Hours Per Worker, Number of Employees and Total Hours in
Five OECD Countries, 1970-1983. (Deviation from Trend in Percentage Points)

YEAR	UNITED STATES			UNITED KINGDOM			FRANCE			FEDERAL REPUBLIC			JAPAN		
	N	h	Nh	N	h	Nh	N	h	Nh	N	h	Nh	N	h	Nh
1970	0.22	-1.06	-0.84	-2.06	1.70	-0.36	-5.96	0.47	-5.49	-0.07	1.55	1.48	-1.89	3.13	1.23
1971	-3.92	-0.73	-4.64	-2.88	-0.08	-2.96	-3.41	0.69	-2.72	0.76	0.41	1.17	-0.24	1.73	1.49
1972	-1.39	0.91	-0.48	-3.73	-0.56	-4.29	-1.09	0.72	-0.37	0.14	0.10	0.24	-0.37	1.55	1.18
1973	3.55	1.24	4.79	-0.42	1.96	1.54	2.19	0.08	2.26	2.14	0.16	2.30	3.58	1.08	4.67
1974	2.96	-0.13	2.84	2.79	-1.05	1.74	4.46	-0.21	4.26	1.02	-1.16	-0.13	3.93	-3.15	0.78
1975	-6.17	-1.21	-7.38	0.41	-2.26	-1.85	2.56	-2.28	0.28	-2.96	-2.83	-5.79	-1.27	-5.15	-6.78
1976	-2.77	0.14	-2.63	-0.21	-1.27	-1.48	2.50	-0.92	1.58	-3.49	0.91	-2.59	-0.81	-2.05	-2.86
1977	0.71	0.77	1.48	3.04	0.12	3.17	2.92	-0.75	2.17	2.04	0.25	1.79	0.95	-1.45	-2.39
1978	4.63	1.11	5.74	5.20	0.40	5.61	2.22	-0.48	1.74	-0.38	-0.32	-0.71	-1.99	-0.55	-2.54
1979	7.00	0.74	7.74	7.34	0.99	8.34	1.40	0.38	1.78	1.56	0.10	1.67	-2.02	0.84	-1.19
1980	3.29	-0.34	2.95	5.56	-0.87	4.69	0.86	1.65	2.51	3.51	-0.09	3.43	-0.75	1.04	0.28
1981	2.61	-0.21	2.41	-2.71	-1.42	-4.13	-1.85	2.01	0.16	2.46	-0.49	1.97	0.70	0.74	1.44
1982	-4.53	-1.81	-6.35	-5.14	0.51	-4.63	-2.68	-0.11	-2.79	0.09	-0.08	0.02	0.76	0.85	1.61
1983	-6.20	0.57	-5.63	-7.18	1.81	-5.37	-4.12	-1.25	-5.37	-2.76	1.49	-1.27	1.32	1.74	3.06

Note: All estimates derived from the logarithmic values of N, h and Nh regressed on a constant and an exponential trend.

Source: United States Department of Labor, Bureau of Labor Statistics, Washington D.C.

somewhat larger than their h-equivalents. As one moves from left to right across the table, however, the role of h within the total Nh fluctuation increases and, in the case of Japan, it is the dominant influence. Although it is not always the case, the beginning of a significant cyclical downturn in economic activity is marked by a shortfall in hours below the trend path that precedes a fall in employment. The best example is the reaction of employment and hours to the OPEC oil supply shock during 1973/74 ; the period is indicated by a dashed line in table 1. Immediately following the shock, all countries display, in 1974, a negative deviation of hours from the trend and a positive deviation in employment. With the exception of France, employment then drops below the trend in either 1975 or 1976. In Japan and the UK, the hours reaction to the shock would appear to account for the largest part of the total Nh adjustment. In FRG and the USA, on the other hand, the subsequent downward adjustment in the employment stock is proportionately greater than the hours adjustment. Another feature of table 1 is that in certain countries there exist relatively long-time periods when the deviation in hours is opposite in sign to that of employees. This is particularly noticeable in France for the periods 1970-72 and 1974-78, in FRG during 1980-82 and in Japan for 1970-72. There is no intention of investigating the historical reasons for this phenomenon; it would simply appear to add considerable weight for the need to study separately the reactions of workers and average hours per worker to economic events.

Some corroborating evidence for several of the findings in table 1 is provided by Gordon (1982) in a study of the different wage and employment experience in the USA on the one hand and Japan and the UK on the other (see also Gordon, 1983). His findings with respect to workers and average weekly hours are summarised in table 2 for the period 1960 to 1980. The relative volatility of workers and hours fluctuations are measured by standard deviations of 4-quarter percentage rates of change. For the entire period, the picture that emerges is in reasonable accord with our foregoing findings. The USA displays variations in N and h that are, respectively, significantly higher and lower than in the other two countries. Note further that when the two components of labour services are added, in row 3, then the USA shows a higher variation than in either of the other countries and particularly so with respect to Japan. Gordon also emphasises the importance of the OPEC supply shock by showing separate estimates of the standard deviations for the period preceeding 1973. These figures are also shown in table 2. It is noticeable that while the relative differences between the USA and the other two countries with respect to N and h still hold, the absolute magnitude of the difference is significantly reduced.

Inevitably, the reasons advanced to explain the contrasting experience among the countries are highly complex and have economic, sociological and psychological explanations as well as long-run historical roots. Nor do the ideas divide neatly so as to capture distinguishable national traits. For example, one argument put forward with respect to the Japanese reliance on hours fluctuations is that high specific human

Table 2 Standard Deviations of Four-Quarter Percentage Rates of Change of Manufacturing Hours and Employment in US, UK and Japan, 1963-1980

Variables	1960(1)-1980(3)			1962(1) - 1972(4)		
	US	UK	JAPAN	US	UK	JAPAN
N	4.05	2.18	2.03	3.39	1.95	2.15
h	1.09	1.74	1.98	1.06	1.37	1.17
N+h	4.78	3.22	1.09	4.06	2.70	0.91

Source: Gordon (1982)

capital investments in large Japanese firms have made employers wary of incurring investment losses due to permanent quits and/or layoffs in the face of unexpected downturns in product demand. Since both sides in collective bargaining agreements can be expected to share the periodic rents arising from specific investments (Hashimoto, 1979) then it seems sensible to emphasise hours fluctuations as a buffer against cyclical changes in demand rather than the more risky strategy of changing the stock of workers. As pointed out by Gordon and others, however, the specific human capital argument also applies strongly to the USA, the UK and other advanced economies. In any case, the Japanese picture is not so simple; the economy has other types of buffer against unforeseen changes in demand. The lifetime employment system only applies to large firms and excludes many smaller enterprises that are far more prone to significant fluctuations in employment. As a further complication, there is evidence that the USA, with a far less stable employment pattern than that of Japan, has a high proportion of long-term job tenures (see Hall 1982).

The Japanese and UK labour markets do tend to have shorter term employment contracts (lasting on average for one year) than in the USA and they also seem to be far more geared to attempting to avoid (although not particularly successfully in the case of the UK) industrial conflict. They have somewhat more flexibility in their wage payment systems that perhaps permit speedier reactions to unforeseen shocks in the system. In particular, the twice-yearly bonus system in Japan, to some extent a profit sharing device, would appear to play an important role in avoiding conflict. In contrast, the USA

system has evolved the method of three-year contracts that may lead to larger deviations between actual and expected wage compensation when large shocks occur and, therefore, to more variable employment reactions. Another feature of the USA economy is that the large number of immigrants may have provided a degree of volatility in the job market that is not matched to the same extent in the UK and not apparent at all in Japan.

Irrespective of these and other explanations of the differences, the main conclusion arising from this summary of long-term trends is that, in several major OECD economies, variations in hours of work would appear to provide an important adjustment mode to fluctuations in economic activity. Further, there is significant evidence that it would be highly misleading to treat such adjustment as if it were adequately represented by movements in the stock of employment since both the timing and magnitude of change in the two component parts of total hours can diverge radically.

2(b) Short-term fluctuations

While the long-term cycles and trends in employment and hours of work are clearly of interest, especially in so far as they reveal substantial international differences, most economic analyses of these variables have centered on their short-run characteristics. In particular, the most important insights into the short-run adjustments of employment and hours have been obtained from factor demand analyses.

The seminal work of Nadiri and Rosen (1969 and 1974) has given rise to a substantial literature that has investigated the own- and cross-adjustment responses of employment, hours and other input factors to changes in product demand. A comprehensive review of the relatively early studies can be found in Hamermesh (1976) while more recent contributions include Topel (1982), Chang (1983) and Rossana (1983 and 1985). The general, although by no means universal, findings in these studies is that the demand for input factors react to changes in output after a lag although the adjustment in hours involves a considerably shorter lag than the adjustments of stocks of employment and capital. Nadiri and Rosen (1974) design an interrelated factor demand model which is tested on USA manufacturing industrial data. Their factor inputs include production workers (N), average hours per production worker (h), the capital stock (K) as well as capacity utilisation and stocks and utilisation rates of non-production workers. Their estimating equations consist of regressing each input factor component on its own lagged value and the lagged values of other inputs as well as on sales (S), a time trend and relative factor prices. From their estimates, they are able to derive distributed lag responses of each factor to a unit pulse in the sales variable. While they observe quite wide industrial responses, a stylised illustration of the typical reactions of three of the factor inputs to a unit pulse in sales (dx/dS where $x=N, h$ and K) is presented in figure 3.

The response of workers to the change in the sales is gradual, achieving its long-run steady state value, typically, within five or six quarters in the Nadiri and Rosen study. Over

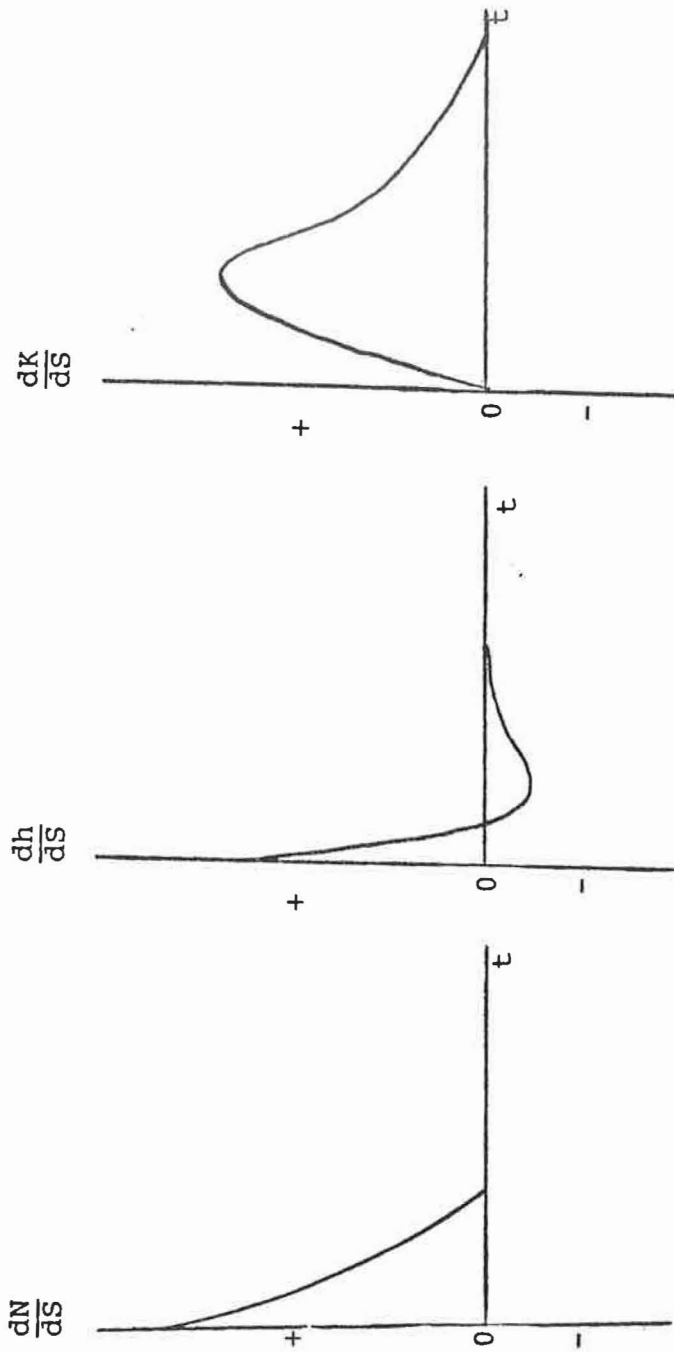


Figure 3

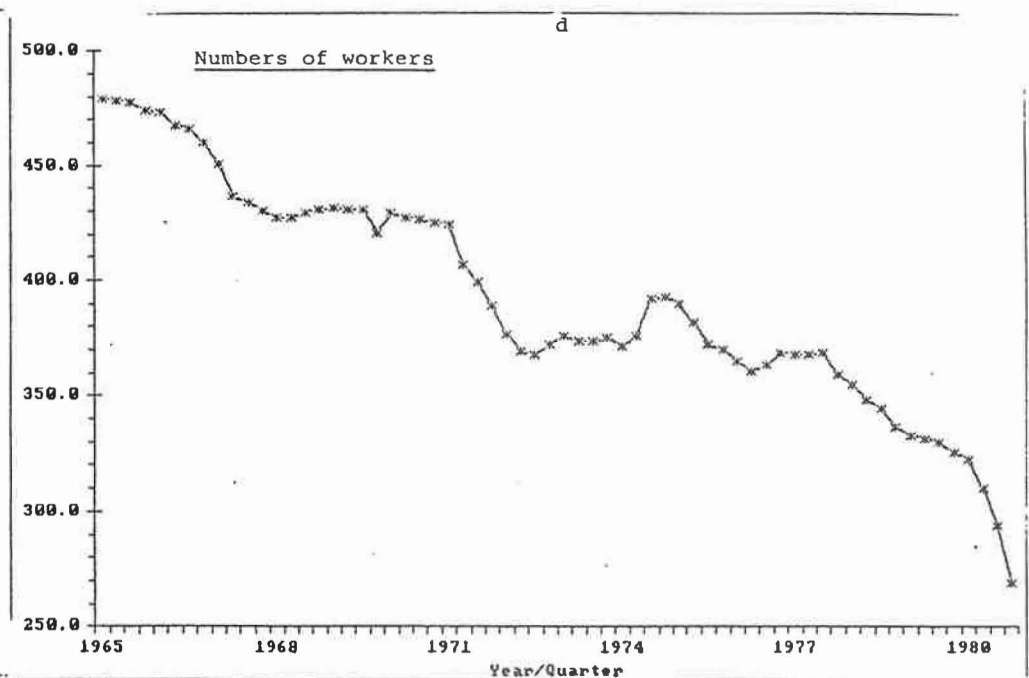
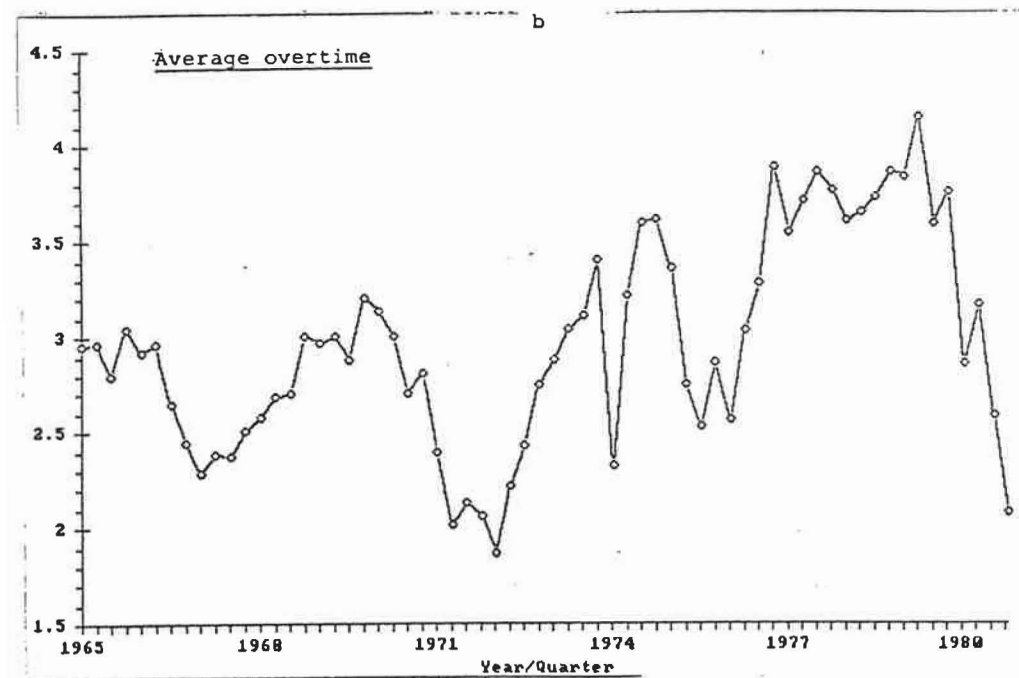
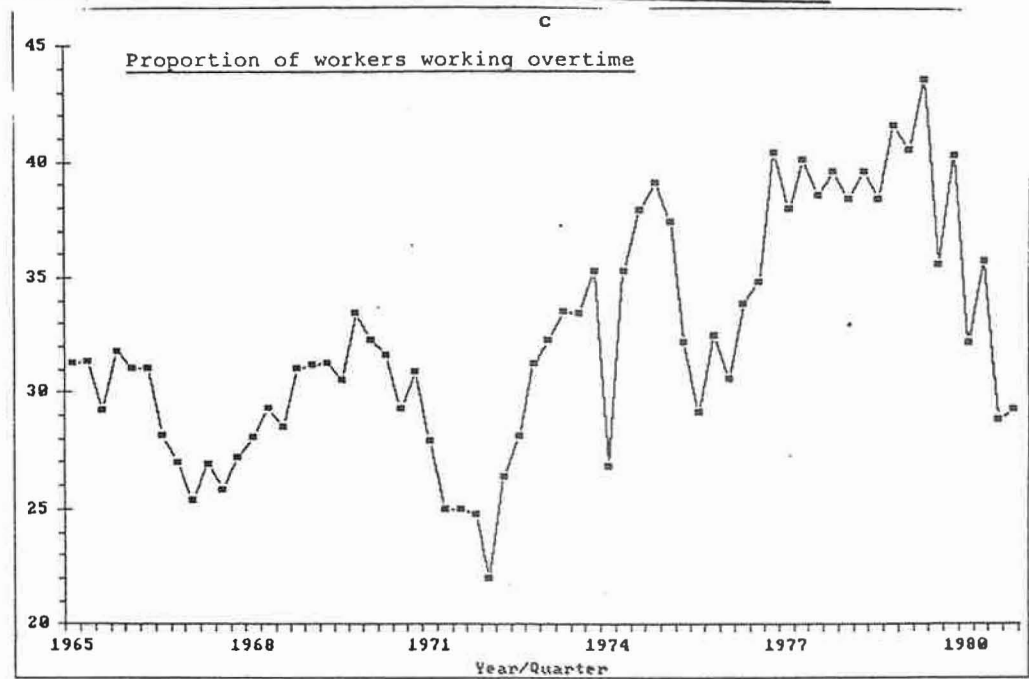
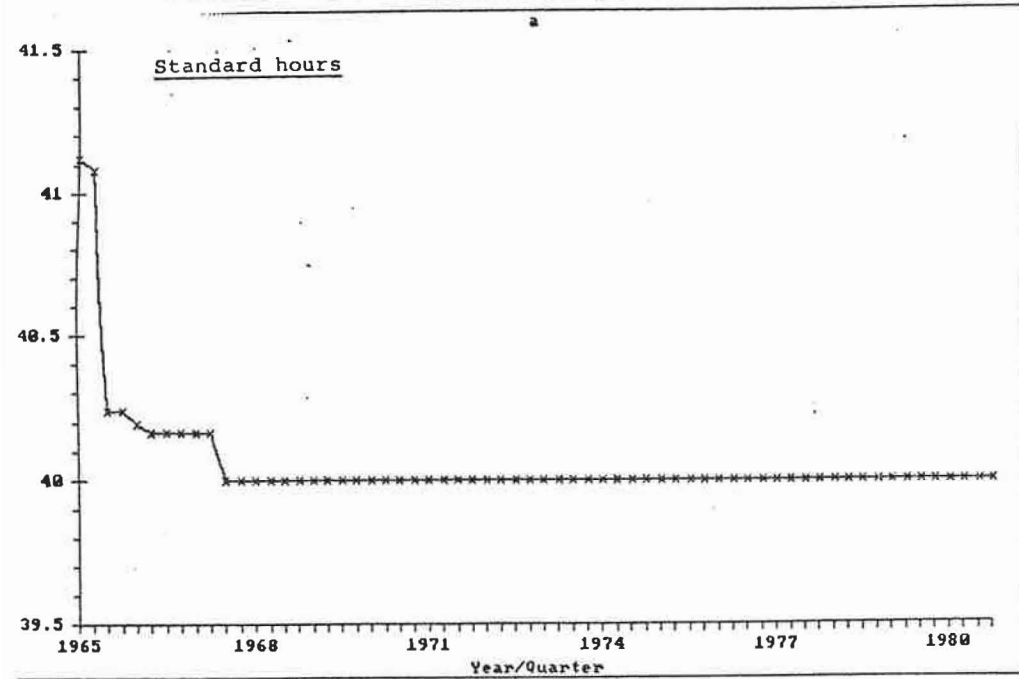
this period, therefore, the level of employment is systematically different from its long-run value. Average hours per worker acts as a buffer to this short-fall or excess of employment by overshooting its equilibrium value through a relatively large initial response and then slowly converging to long-run equilibrium. The capital stock reacts in yet another fashion. For obvious adjustment cost reasons, there is a delay before maximum response is achieved and then this is followed by a gradual tendency to long-run equilibrium resulting in a typical inverted U-shaped curve. Topel (1982) presents a more sophisticated version of this model by dividing changes in product demand into anticipated and unanticipated components. Also, he considers the interactive role of inventories within the short-run employment and hours responses. In general, his findings with respect to N and h are not dissimilar for those portrayed in figure 3.

These sorts of employment-hours responses are predicted in theoretical approaches to dynamic labour demand that model the implications of the quasi-fixed costs (such as hiring, training and deferred fringe benefits) associated with changing the employment stock (e.g. Nickell, 1978). Quasi-fixed labour costs will also play an important role in some of the developments of the later chapters.

The response pattern of hours of work to changes in product demand illustrated in figure 3 has been found in a large number of empirical studies in several OECD countries. It would be misleading to believe, however, that this type of measurement provides a complete picture of short-term reactions in labour utilisation. Overlooking such features as part-time

employment and shiftworking for the moment, there are a number of different ways in which average hours per operative may be adjusted to a product demand or a relative factor price stimulus. The first is largely exogenous to the firm and involves standard hours. In most countries, a high proportion of hours worked are determined at a national collective bargaining level of negotiation and this sets a standard for weekly working hours. It may be, for example, that a fall in aggregate demand may stimulate policy action to cut standard hours in order to "preserve" jobs. Over and above standard hours, the firm itself can vary, subject perhaps to supply-side constraints, its average number of overtime hours. It may do this in two ways. First, it can change the number of overtime hours per operative working overtime. Secondly, it may change the proportion of its total employees who work overtime. (Of course, we recognise that some firms, for a variety of reasons, do not employ overtime working at all). Now, given the exogenous nature of standard hours, we might anticipate that the sort of pattern derived in figure 3 relates more to marginal changes in hours within the overtime region rather than to standard hours of work. This is illustrated indirectly with respect to UK metal working industry in figure 4. This shows, in quadrants (a), (b), and (c), respectively, the movements in standard hours, average overtime hours and the proportion of workers working overtime for quarterly periods from 1965-80. The first quadrant reveals a step-wise function between 1965 and 1968 when two major reductions in standard hours occurred, followed by a flat plateau until the end of the period. As would be expected, the graphs of overtime per worker

Figure 4 Hours of Work and Employment in the British Metal Working Industry, 1965-1980



and the proportion of workers working overtime are quite cyclically variable and they have a very similar pattern to one another. The pattern of employment is also shown in figure 4, in quadrant (d) and it displays a significantly different pattern of change compared to overtime working. The industry has experience fairly persistent falls in employment over the period, relieved only by occasional short-lived and relatively minor upturns.

Note that the standard hours cuts in quadrant (a) are followed by overtime increases in (b) and (c) and fairly stagnant/marginally falling employment in (d). These phenomena are in line with the experience of total UK manufacturing industry at this time and an economic appraisal can be found in Hart (1983). While, of course, it is dangerous to draw conclusions on the basis of one, aggregate level industry, the outcomes are, at least, consistent with the predictions of influential microeconomic models reviewed in Hart (1986).

3 Part-time Working, Short-time Schedules and Temporary Layoffs

So far, attention has been concentrated on hours of work as an important means of adjusting labour services requirements at the intensive margin. Clearly, both part-time and short-time working practices are closely related concepts. In one sense, they provide more extreme methods of achieving hours flexibility beyond those of either marginal changes in overtime working or cuts in the standard workweek. On the supply-side, an important element of labour seeks to supply its labour

services at weekly hours significantly less than the standard 35 or 40 hour workweek. It is dominated by economically active females. On the demand side, the ability of certain firms to employ a mix of part-time and full-time workers may provide great flexibility in production scheduling as well as in controlling labour costs. Here, we are content to illustrate the quantitative importance of this topic.

For many firms, flexible overtime schedules as well as other special working time arrangements provide a relatively speedy means of responding to unforeseen changes in product demand. In extreme cases, however, downturns in demand may be so severe that firms require significantly greater reductions in hours per worker or substantial increases in layoffs in order to avoid severe economic strains or even bankruptcy. As a form of insurance against chronic losses of jobs in relatively extreme conditions, some governments have devised schemes that effectively subsidise firms that require large scale cut-backs in their operations. Workers in such firms are compensated, in part, for their loss of earnings, - usually in comparison to standard weekly earnings - as a result of being required to work short-time schedules. A closely related form of subsidy, particularly prevalent in the USA, takes the form of state compensation for loss of earnings of temporarily laid-off workers who are subsequently re-employed by the firm when conditions improve. The essential difference between these approaches is that, in the former case, unutilised hours are spread across the entire workforce in the form of worksharing while, in the latter case, a certain group of workers take the full amount of the slack by taking "implicitly agreed" periods

of full leisure. We will concentrate our attention on summarising briefly the quantitative significance of these two forms of working time.

(a) Part-time Employment

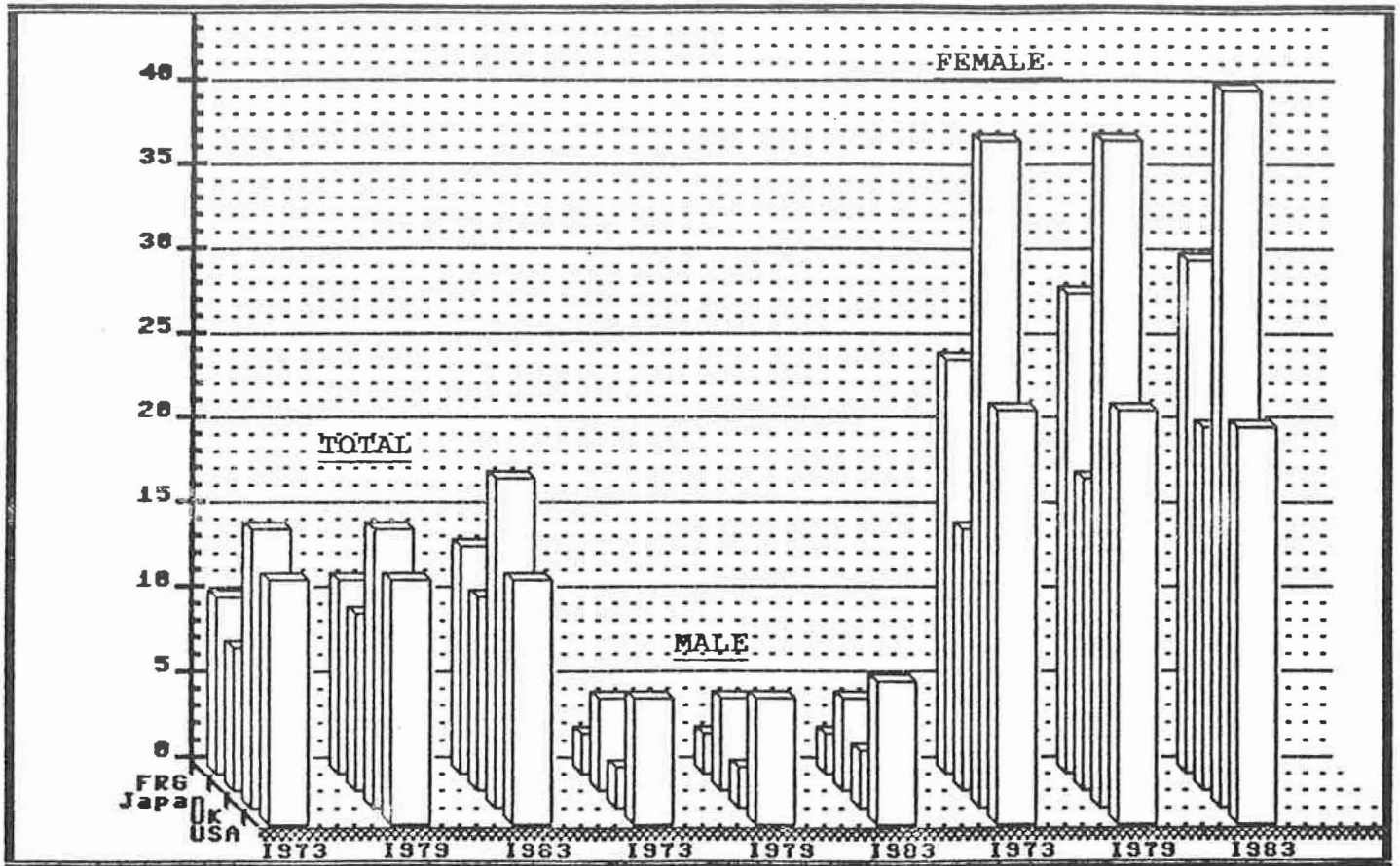
Part-time employment is, overwhelmingly, a feature of the female part of the labour market. This is illustrated in table 3 which shows women's percentage share in part-time employment for six OECD countries between 1973 and 1983. In 1983, women account for well over 80% of total part-time employment in four of the countries while, in Japan and the USA, the figure is 70%. With the exception of Sweden and the UK, which experienced some slight falling off in the female share over the entire period, there has been a tendency for this percentage to increase somewhat between 1973 and 1983. Figure 5 shows, for four of the countries in table 3, part-time employment as a percentage of total employment. In 1983 the combined male and female percentage varies between 10.5% in Japan and 19.1% in the UK. When divided into male and female percentages of respective male and female totals, however, a highly contrasting picture emerges. In 1983, the male percentage varies between 1.7% in FRG and 7.6% in the USA. In sharp contrast, the female percentage in the same year varies between 21.1% in Japan and 42.4% in the UK. There is no general trend in these percentages between 1973 and 1983 : some countries display a gradual upward trend whereas, in others, there is some downturn in the later years.

Table 3 Women's Percentage Share in Part-time Employment 1973-83

	1973	1979	1983
France	77.9	82.0	84.6
FRG	89.0	91.6	91.9
Japan	60.9	64.5	70.7
Sweden	88.0	85.2	84.6
UK	90.9	92.8	89.6
USA	68.4	69.8	70.3

Source: OECD Employment Outlook, September, 1985

Figure 5 Part-time Employment as a Percentage of Total Employment: FRG, Japan, UK and USA, 1973-1983

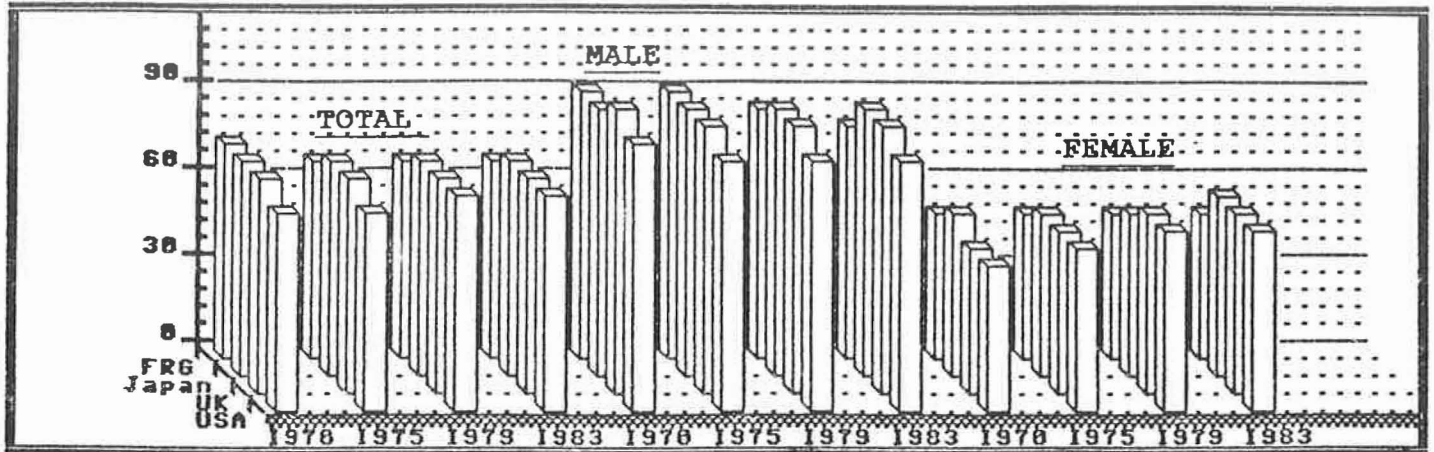


Source: OECD Employment Outlook, September 1985

While the percentage of part-time to total employment has remained fairly static over the past ten years or so, another statistic indicates the growing importance of female employment. In several countries the total labour force participation rate has been declining throughout the 1970s and into the 1980s. When broken down into a male/female dichotomy, however, the common picture is one of a decline in male participation rates offset partially by an increase in female participation rates. There are exceptions to these trends but our selected group of countries, shown in figure 6, are reasonably representative. In FRG, for example, total labour force participation between 1970 and 1983 fell steadily from 69.5% to 64.8%. However, while the male rate fell from 92.5% to 80.2% over this period, the female rate actually rose from 48.1% to 49.6%. A similar sort of picture holds also for Japan and the UK. Some countries, not shown in figure 6, display even more marked divergences in the male-female patterns. For example between 1970 and 1983 the Swedish total participation rate increased from 74.3 to 81.3. This consisted, however, of a fall in male participation (89.2% to 65.9%) and a substantial rise in female participation (59.4% to 76.6%).

The economic analysis of part-time employment is dominated by the supply-side literature. The vast richness of this work is well summarised in Killingsworth (1983). For the sorts of quantitative reasons highlighted in figures 5 and 6, the work is dominated by attempts to explain both the supply of total part-time hours and female labour force participation rates. FitzRoay and Hart (1985) emphasise that the demand-side of the problem also is an extremely important, though neglected, area

Figure 6 Labour Force Participation Rates (Percentages) -
FRG, Japan, UK, USA, 1973-1983



Source: OECD Employment Outlook, September 1985

for consideration. One aspect of their analysis is that it is important to distinguish between full-time and part-time jobs as well as the various gradations of time worked below full-time hours. Within this particular context it is interesting to note that for most of our six OECD countries, the growth of part-time employment contrasts markedly with a general decline in full-time employment. Growth rates are shown for periods between 1973-1975 and 1981-1983 in table 4. The experience of the USA and Japan contrasts significantly with the European countries. In the former two countries both full-time and part-time employment have grown since the mid 1970's although , in Japan, part-time growth rates are somewhat more significant than full-time equivalents. In Europe, on the other hand, recent positive growth rates in part-time employment have contrasted with declines in full-time jobs.

One other important feature is worth noting with respect to the full-time/part-time dichotomy. The cases of FRG and Sweden can be taken as a good example. In 1981, female participation in Sweden was 75%, easily the highest in Europe, while in FRG it was 50%. Of those females who did participate in the two countries in 1981, however, 54% had full-time jobs in Sweden while in FRG the comparable figure was 74%. In other words, the participation rate by itself may give a very misleading picture of total female working hours.

(b) Short-time Working and Temporary Layoffs

It will suffice to report relatively briefly on short-time working practices and on temporary layoffs.

Table 4

Full-time and Part-time Employment, 1973-83 - Average Percentage Annual Growth Rates

	1973-1975		1975-1979		1979-1981		1981-1983		1983	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Employment (thousands) Full-time	Part-time
France	0.6	8.3	0.4	0.4	-0.2	0.3	-1.2	7.2	19299	2062
Germany	-2.5	3.2	0.4	0.9	1.2	4.2	-1.5	1.4	22671	3276
Japan	-0.7	12.5	1.7	0.9	1.9	3.9	1.8	4.7	36650	4330
Sweden	1.7	5.1	-0.9	6.9	-0.1	2.6	-0.2	0.4	3151	1073
UK	-0.9	3.1	1.0	-0.1	-2.6	2.5	-1.9	3.0	18908	4537
USA	-1.0	1.3	3.9	3.6	0.1	0.5	0.6	0.4	73624	12417

Source: OECD employment Outlook, September, 1985

In several European countries short-time working is effectively subsidised by the government in those individual firm cases where it can be shown that adverse economic conditions require a substantial reduction in the working time of existing employees in order for the firm to remain viable. (Specific details on regulations concerning the most important countries can be found in Hart, 1984b). The firm is subsidised because part of its standard wage bill is reimbursed without rating the firm's own short-time working experience. A similar type of subsidy occurs in the case of temporary layoffs discussed below.

The FRG has perhaps the best developed scheme together with the largest potential subsidies. If a given firm satisfies certain stringent requirements as to economic necessity, a wage subsidy may be granted to its employees for lost working hours below standard hours; the subsidy usually lasts for no longer than six months, and it amounts to 68% of the net wage lost due to the hours reductions. The Institut für Arbeitsmarkt- und Berufsforschung (IAB) has attempted to calculate the employment saving effect of the short-time working scheme. The estimates from 1974 until 1984 are shown in table 5. The total beneficiaries from this scheme are broken down into two groups of people. The first is an estimate of those who would have registered as unemployed if the subsidy had not been available. The second is an estimate of those who would have been registered as unemployed as well as those who would have joined the "hidden" unemployed (stille Reserve). The year 1975 and the years 1982-4 are easily the most quantitatively significant. In order to put the figures into some better perspective we take

Table 5

Estimates of Employment and Unemployment Effects of Short-time Working Scheme: FRG, 1974-1984

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total beneficiaries of scheme (thousands)	292	773	277	231	250	88	137	347	606	690	750
Estimated numbers unemployed in absence of scheme											
a) in thousands	48	147	63	36	33	19	30	72	141	155	168
b) as % of total beneficiaries	16	19	23	16	17	22	22	21	23	22	22
Estimated numbers unemployed and "hidden" unemployed in absence of scheme											
a) in thousands	73	223	96	55	50	29	46	108	202	222	240
b) as % of total beneficiaries	25	29	35	24	26	33	34	31	33	32	32

Source: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, Heft 1/79 u. 4/84

1975 as an example. Leaving aside the "hidden" unemployment category, the estimated numbers unemployed in the absence of the scheme are in the region of 147 thousand. This represents an "unemployment saving effect" due to the subsidy in that year of 30,000 persons or a 0.1 percentage point increase in the rate of unemployment. It would appear, therefore, that the overall quantitative impact of this scheme is not great. Nonetheless, substantial policy interest is given the subject of short-time working.

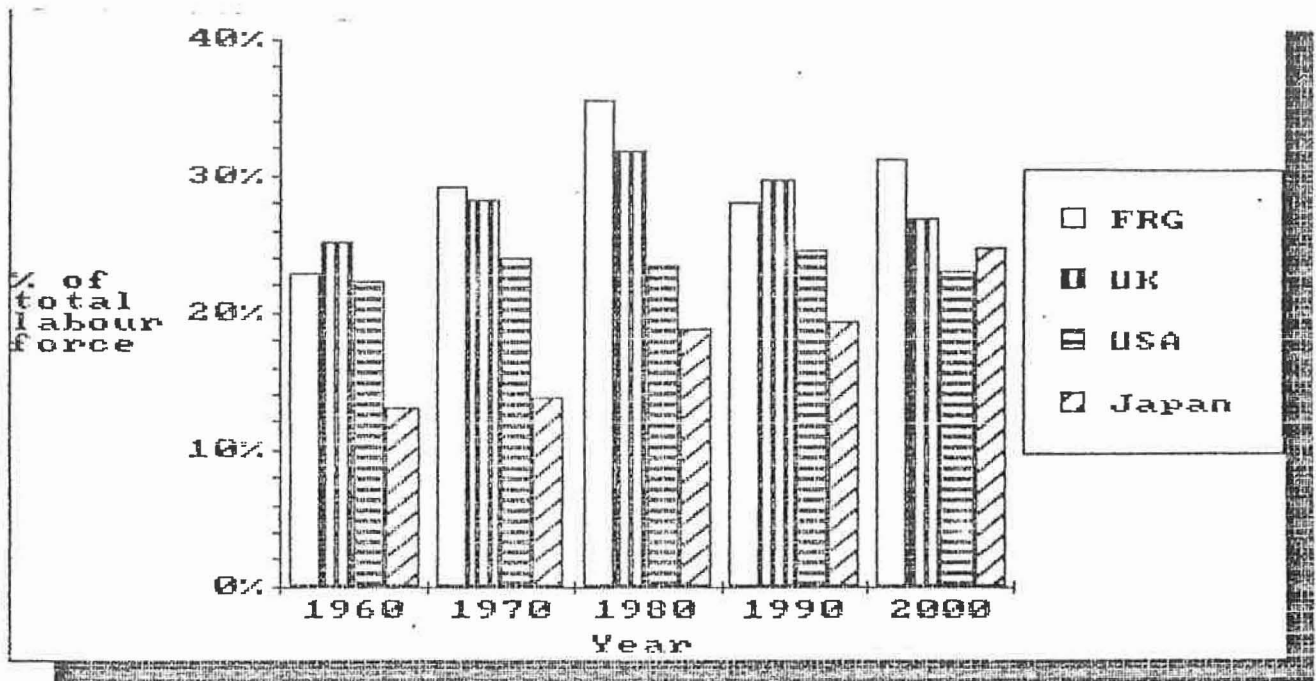
In the USA, it is temporary layoffs rather than short-time working that provide the more important example of this sort of working reduction. By contrast, temporary layoffs are relatively unimportant in Europe. Feldstein (1975) and Lilien (1980) show that, on average, about two-thirds of all layoffs in American manufacturing industry are temporary in the sense that the laid-off workers are re-hired by their original employer. Topel (1982) shows that of all employer-initiated layoffs in manufacturing, temporary layoffs account for just under one-half. Specific industrial breakdowns are also provided by Topel. The realisation of the seeming importance of this phenomenon in the 1970s led to an important literature, dominated by implicit contract theory, that emphasised the short-run, voluntary nature of unemployment. More recently, it has been discovered that the importance of temporary layoffs within total unemployment has been greatly exaggerated by several of the earlier studies and there has been a movement back towards trying to understand the nature of permanent layoffs and longer-term unemployment.

4 Working Lifetime

The foregoing topics have dealt with working time arrangements that can usefully be described within relatively short intervals of time, say a working-week or year. In a longer-term perspective, the length of working lifetime introduces further issues of relevant interest. Of these, the predominant subjects concern the age of retirement and activity rates of the older age groups.

Figure 7 shows the population aged 65 and over as percentage of the total labour force in FRG, UK, USA and Japan, both historically from 1960 to 1980 as well as a projection to year 2000. Over the past two decades the growth of these percentages has been most marked in FRG and UK and, in 1980, the values stood at over 30% in both economies compared to around 20% in the USA and Japan. The USA displays the greatest stability in the percentages over the entire period, past and forecast. Indeed, the USA is one of only two OECD countries (the other being Canada) that has shown a decline, albeit quite small, in the population 65 years and over as percentage of the total labour force from the mid-60's until the present time. Japan is the only country to show a persistent (actual and forecasted) rise in the percentage from 1960 to the year 2000; while it started at a very low base in 1960, by the end of the period it is forecast to have a larger percentage than in the USA and to lie not far behind the UK. Forecasts beyond the year 2000 reveal that the trend in Japan will continue and that, in fact, it will outstrip its main OECD competitor countries.

Figure 7 Population 65 and over as Percentage of
Total Labour Force: FRG, UK, USA and Japan, 1960-2000



The type of predicted trends given in figure 7 are even more hazardous to make than the usual demographic forecasts since the size of the labour force is a particularly difficult variable to ascertain. Labour force size is subject to influences from both natural demographic factors as well as regulation by exogenous policy decision. For example, governments can control the age at which the average person enters and leaves the labour force. In the case of Japan, the problem is particularly acute since the official retirement age is currently somewhere between 55 and 57 years but there is a strong expectation that this will be significantly increased in future years towards levels approaching the USA and European countries. For this reason alone, the projected changes in the size of the older population relative to the labour force in Japan might be expected to be less than those relative to the total population. This is confirmed in figure 8 which shows the number of persons 65 and over as a percentage of the total population between the years 1950 and 2000. After 1980, the projected Japanese growth in these percentages are greater than their equivalents in figure 7 and, by the year 2000, the Japanese percentage is greater than both the UK and USA. Figure 9 shows the same patterns for the percentages involving age groups 55 years and over, a cohort nearer to that of the current official retirement age groups in Japan. Now, the Japanese projected growth rates are such that the percentages are higher still compared to the other three countries and from this it can be inferred that the relatively faster aging population in Japan is a phenomenon that will carry on well into the next century.

Figure 8 Population 65 and over as Percentage of Total Population:
FRG, UK, USA and Japan, 1950-2000

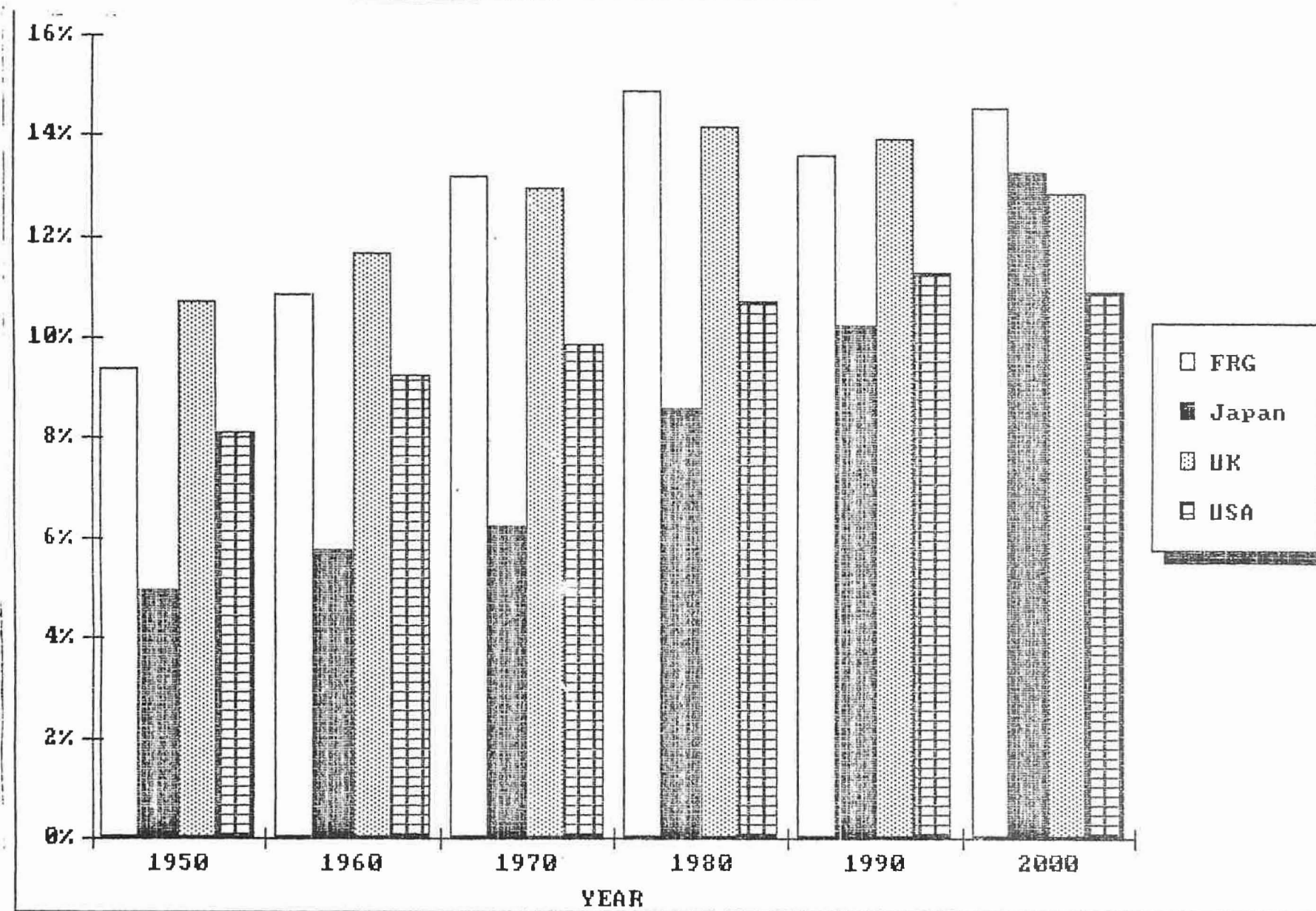
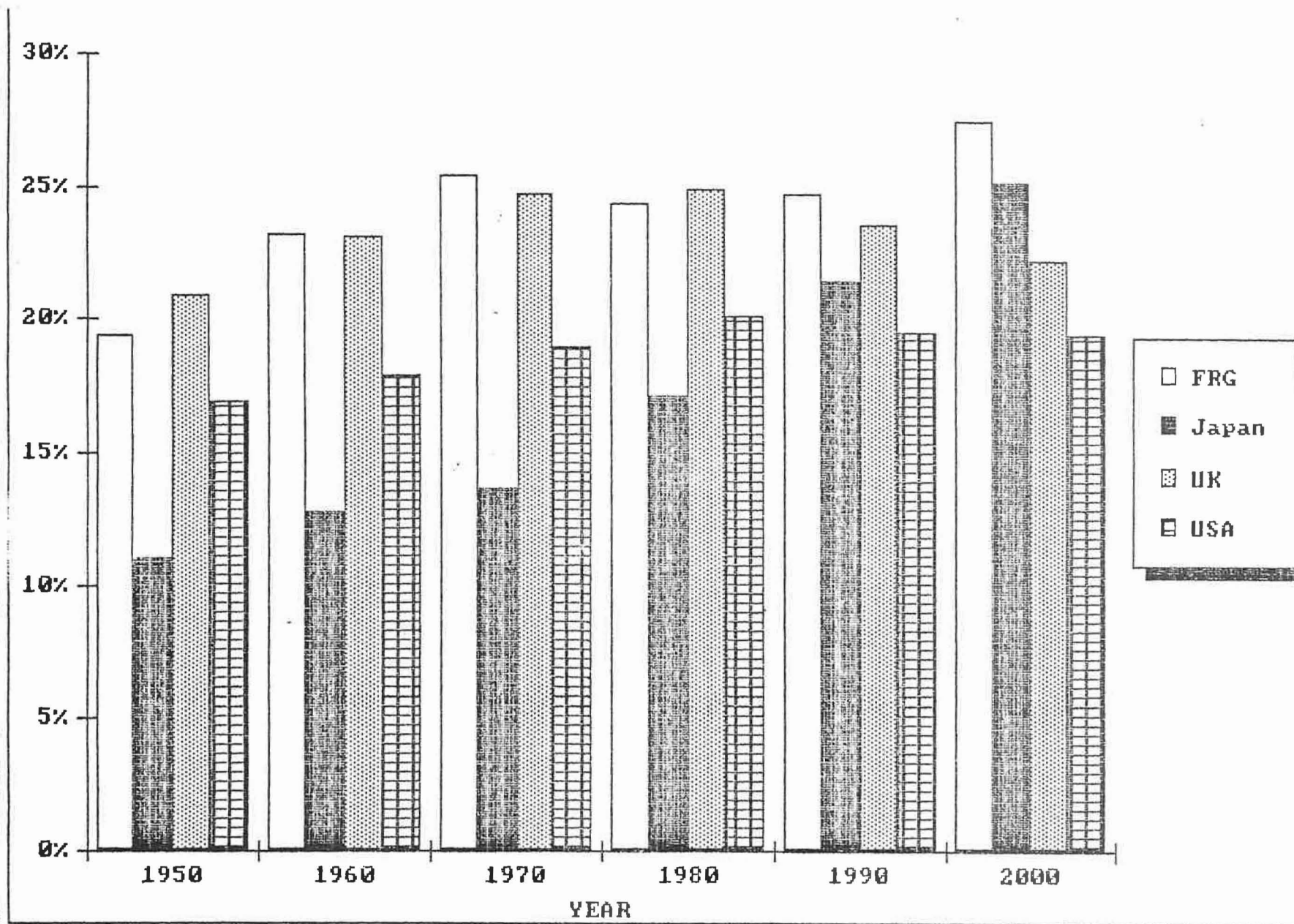


Figure 9 Population 55 and over as Percentage of Total Population:
FRG, UK, USA and Japan, 1950-2000



Despite the fact that the statutory age of retirement in Japan is significantly lower than in other OECD countries (between 55-57 years of age compared to, typically, 60-65 years of age), it would be misleading to conclude that this difference constitutes a sizeable gap in the proportion of Japanese economically inactive population within the older cohorts compared to the other countries. In the Japanese economy, a high proportion of retirees return to the labour market, often at significantly reduced rates of compensation, and continue to work. Participation rates of Japanese males between the age of 55 and 64 are well over 80%. On a comparative basis, the activity rates of persons aged between 55 and 64 and over 65 years are shown in table 6. All countries have shown some decline - especially FRG - although the absolute level in Japan is significantly higher than the other two or three countries. The position in 1980 is displayed in Figure 10 where the Japanese activity rates are compared to those of the USA and FRG for persons aged 60 and over and 65 and over.

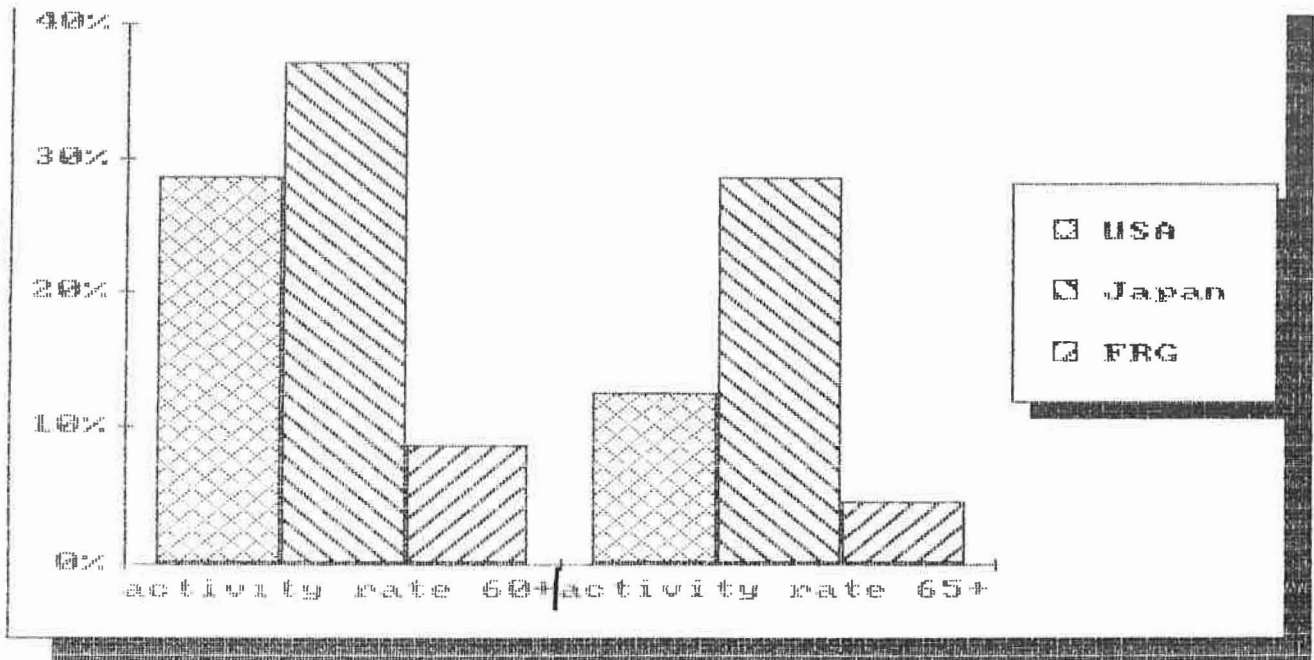
The Japanese retirement position relative to other countries appears, at first sight, to be quite distinct. However, the main difference occurs with respect to the level of statutory retirement rather than the economic activity of the older working groups. This introduces an interesting element of flexibility into the Japanese labour market that is not always readily recognised. Thus, while Japanese compensation structures have, on average, a somewhat greater emphasis on long-term contracts with seniority based payment structures, it is important to note that the maximum expected

Table 6 Activity Rates of 55-64 and 65 and over Age Groups:
FRG, UK, USA, Japan 1960-80

Age Group/Country	1960	1965	1970	1975	1980
<u>55-64</u>					
FRG	50.5	50.0	48.7	48.1	44.7
UK	57.9	61.3	64.0	64.0	-
USA	60.2	60.5	60.9	60.9	55.5
Japan	64.7	66.7	68.1	67.5	64.4
<u>65 and over</u>					
FRG	14.2	11.8	9.7	9.2	4.6
UK	13.4	12.3	11.4	11.0	-
USA	20.3	18.2	16.2	15.2	12.6
Japan	35.6	35.3	34.9	32.3	28.7

Source: ILO Yearbook of Labour Statistics

Figure 10 Activity-rates in 1980 of Persons Aged 60 and over and 65 and over: USA, Japan; FRG



length of tenure is much shorter than in other countries given the lower "official retirement" age. Seniority privileges are not granted to official retirees who subsequently return in the labour market. Notwithstanding observations concerning activity rates, an important point to note is that the predicted growths of the elderly population in Japan are significantly greater than those in other countries. Japanese policy makers are critically concerned about the fiscal and monetary problems associated with financing higher numbers of retirees by an ever decreasing proportion of active workers. With this sort of problem occurring to a greater or lesser extent in many OECD countries, one of the recent trends has been to investigate the possibilities of switching from a pay-as-you-go pension contribution structure to more privately based funded schemes. Further, in Japan, the current discussions concerning increases in the statutory age of retirement have much to do with attempting to control future demands on pension schemes. Table 7 shows, again for the same four countries, the change in statutory non-wage labour costs from 1975 until 1981. These costs (see Hart 1984a) are dominated by pension and health contributions. As can be seen, such statutory contributions are far higher in FRG than in the other countries although the growth rates in the contributions, from admittedly much lower bases, are most significant in the UK and Japan. The major fear in Japan is that the growth of such non-wage labour costs as a percentage of total labour costs will, if anything, accelerate as the economy moves into the next century with, potentially, serious problems for

Table 7 Staturory Non-Wage Labour Costs 1975-81:
FRG, UK, USA, Japan

	1975	1978	1981	75-81 (perc. change)
FRG	17.6	18.4	18.5	5.11
UK	7.2	9.3	9.7	34.72
USA	7.5	8.1	8.1	8.00
Japan	6.1	6.8	7.5	22.95

Source: Stat.Bu.Amt FS 16 Reihe 4.1
 Arbeitnehmerverdienste im Ausland

relative Japanese international labour costs. Interesting examinations of these trends can be found in Shimada (1980) and Hiraishi (1980).

5 Concluding Comments

At the beginning of this chapter, it is pointed out that countries differ considerably over their policy emphasis on given working time topics. In section 2 it is shown that the USA has experienced more employment variation and less hours variation than in some other major OECD countries. Perhaps associated with these trends, USA economists have tended to show more interest in changes in the stock of employment - for example through temporary layoff unemployment - than in changes in worker utilisation. In Europe, on the other hand, large reductions have taken place in the length of the standard workweek since the Second World War and European economists have shown far more interest to study the related employment effects of such reductions and to forecast what might happen if future workweek cuts are undertaken. The variability of Japanese working hours appears to be the greatest of all; however, this would appear to have more to do with hours acting endogenously as a buffer to changes in aggregate demand rather than with exogenous changes in the standard workweek. For instance, after the middle 1970's (see figure 2) there has been a tendency for average hours to rise somewhat in Japan. Elsewhere, in sections 3 and 4, we have shown international differences in the degree of part-time working and in the age structure of the population. Again, given wide divergences of

experience, it is not difficult to understand why countries lay a greater or lesser emphasis on given working time arrangements.

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