

LABOUR MARKET FLEXIBILITY

Friedrich Klau and Axel Mittelstadt

CONTENTS

Introduction . . . . .	.8
I. Labour market flexibility and efficiency	8
II. Criteria and determinants of labour market flexibility	10
A. Aggregate real labour cost flexibility	10
B. Adaptability of relative labour costs across enterprises and occupations	12
C. Labour mobility	13
D. Flexibility of working time and work schedules	14
III. Indicators of labour market flexibility	14
A. Indicators of aggregate labour cost flexibility	14
1. Measures derived from aggregate wage equations	15
2. Other indicators	19
3. Possible changes in wage flexibility	22
B. Indicators of adaptability of cost differentials	27
C. Indicators of labour mobility	35
D. Indicators of flexibility of working time and work schedules	37
E. Major results	40
Bibliography	44

The authors are members of the Growth Studies Division of the OECD Economics and Statistics Department. They gratefully acknowledge helpful comments by D. Coe, A. Dean, G. Holtham and M. Yoshitomi.

INTRODUCTION

Recent and projected labour market trends are characterised by increasing polarisation and segmentation among OECD countries and within national labour markets. European unemployment is forecast to exceed the North American rate by large margins with high unemployment countries likely to see continued increases and countries with comparatively low levels of unemployment further declines. At the same time, long-duration unemployment and the excess of youth over total unemployment rates are typically most serious in high-unemployment countries.

It is often argued that differences between unemployment rates for countries or regions are in part explicable in terms of different degrees of labour market "rigidity" – or to put it positively, "flexibility". Price shocks arising in conditions of "rigid" labour markets are thought to lead to higher structural unemployment, while "flexible" labour markets allow adjustments to such shocks with no or little employment loss. Making labour markets more responsive to changing demand and supply conditions, if that were possible, would therefore help to remove impediments to a return to sustainable high employment levels. The purpose of the present paper is to examine these propositions and to consider their implications for policy. Part I considers desirable degrees of labour market flexibility in the light of demand and supply shocks. Part II discusses different aspects of labour market flexibility. Part III presents a number of indicators relating to the functioning of labour markets. Special attention is devoted to implications which different degrees of labour market flexibility may have for employment in the event of external price shocks.

I. LABOUR MARKET FLEXIBILITY AND EFFICIENCY

Contract theory of labour markets suggests that the smoothing of income over time is a natural feature of labour markets in industrialised countries. Turnover costs of hirings, quits and lay-offs are usually high, especially for skilled workers with firm-specific human capital. Moreover, perceptions of fairness and justice largely based on historical relationships strongly affect work motivation and hence

productivity. There is a permanent risk of losses in "team" or firm productivity flowing from a decline in work motivation of individuals or a small group of employees. Hence, from the point of view of employers, income smoothing is desirable *so long as* demand variations remain within the expected range and are perceived as being temporary. For employees, stable wage incomes over the contract period are preferable to volatile income flows since consumption expenditure is more easily planned under conditions of predictable wages than in the presence of potentially large income losses. For these reasons, employers and employees enter into long-term work relationships (cf. Schultze, **1984**, Hall, **1980** and Nissim, **1984**).

Under long-term work arrangements, which add to job security, employees may receive a wage in excess of their marginal revenue product in the early part of the employment period. With human capital accumulating, this pattern is often reversed with time, with wages and fringe benefits eventually tending to equate the marginal labour product over the entire contract period. Given the mutual benefits from longer-term work relationships, some measure of wage inertia may be viewed as an indispensable element of labour market efficiency. Similarly, search unemployment, a normal feature of labour markets, is essential to labour market efficiency as it assists the optimal allocation of labour resources.

Long-term work attachments tend to impart a rigid bias to money wages over the business cycle in that the behaviour of money wages differs from what would be observable in "auction" labour markets. Long-term work attachments also imply that relative wage positions remain broadly stable over the cycle. In contrast, differentials between wages for skilled and unskilled wages tend to widen in a downswing and narrow in an upswing reflecting the greater cyclical sensitivity of wages at the lower end of the wage spectrum.

The optimal degree of labour market flexibility (consistent with labour market efficiency) changes when unexpected demand or supply shocks occur, upsetting the framework of expectations incorporated into long-term work arrangements ("climate change"). Shocks like those experienced in the **1970s** require more than temporary changes in economic relationships since they may entail longer-lasting reductions in productivity growth, and enhance uncertainties and risk aversion. In such a situation, employers may no longer find it profitable or feasible to fulfil previously established wage contracts and related aspirations. In contrast, employees operating within the old framework of wage determination may initially resist changes in contractual relationships, making labour markets inflexible in the wake of shocks.

Much of the recent discussion about the need for greater labour market flexibility is therefore about macro and micro "climate changes" in economic

conditions and their short- and longer-run impact on output and inflation. The crucial question is how much time it takes to "...break through the short-run stickiness of wages and prices in the face of relative disturbances to produce the aggregate adjustments...". (Schultze, 1984).

II. CRITERIA AND DETERMINANTS OF LABOUR MARKET FLEXIBILITY

The present study distinguishes four broad aspects of labour market flexibility:

- i)* Real labour cost flexibility at the economy-wide level;
- ii)* Adaptability of relative labour costs across occupations and enterprises;
- iii)* Labour mobility;
- iv)* Flexibility of working time and work schedules.

The first two are macro- and microeconomic aspects of labour-cost flexibility, while the latter two relate to the quantitative and qualitative adaptability of the supply and the use of labour. Some of these elements interact. For example, rigid wages for full-time employment may lead to increased openings for part-time work raising the flexibility of working time and work schedules. Similarly, market-clearing wage differentials partly depend upon the degree of labour mobility.

A. Aggregate real labour cost flexibility

Aggregate real labour cost flexibility is a macroeconomic concept. Perfect flexibility of real labour costs would require immediate and full adjustments of real-product wages and related non-wage labour costs to changing productivity levels or terms of trade. Given the composite nature of labour costs on the one hand and short-term as well as structural productivity changes on the other, it is useful to distinguish between cyclical responsiveness of real wages, adaptability of real wages to external shocks, and, finally, changes in non-wage labour costs and benefits relative to total compensation.

Regarding the first aspect, a high degree of cyclical **responsiveness** would be reflected in a quick and full adjustment of nominal wages to variations of current inflation and productivity. For most countries, nominal wage claims seem primarily to be influenced by current and past inflation and the employment/unemployment

situation, although cyclical productivity appears to be important in some countries, e.g. Germany and Switzerland (cf. Coe, 1985). Moreover, as noted above, wages will tend to be smoothed relative to what would be determined over time by auction markets. As a result, real wages typically lag productivity, permitting profit margins to rise during the early phases of an upswing, but usually causing them to fall before the upper turning point is reached and during the ensuing recession. The extent to which the cyclical profile of real wages may differ from that of productivity depends upon a number of institutional factors (wage bargaining modes, indexation clauses, unemployment insurance provisions, the degree of unionisation, etc.) as well as structural and behavioural features (composition of the labour force, lay-off and hiring costs, attitudes towards short-time or overtime work, etc.).

A high degree of aggregate real wage flexibility in the event of an inflationary external price shock requires real wages to adjust quickly to losses in the terms of trade. Likewise, real wage flexibility *in* the face of a *trend* decline in *total* factor productivity requires a prompt adjustment in real wages. If wages are not adjusted downwards deliberately, a positive "real wage gap" develops or widens. In this case, three mechanisms tend to restore factor income balance over time:

- i) Cuts in unprofitable output;
- ii) Substitution of capital for labour; and
- iii) Downward pressure on wages as unemployment increases due to the first two mechanisms.

In the first two cases the real wage gap narrows because of cost-induced labour productivity gains rather than wage moderation. In the third case, real wages respond to higher unemployment. A falling or negative real wage gap is therefore not necessarily synonymous with real wage flexibility nor, for that matter, indicative of a return to an "equilibrium" wage level.

Reducing wage gaps via cost-induced increases in labour productivity is typically accompanied by rising unemployment and falling capital productivity. As a result, countries may be confronted with growing mismatches between the steadily rising labour force and potential employment at normal capacity use, i.e. an increase in non-cyclical unemployment. Hence, initial real wage rigidity needs to be followed by a prolonged period of real wage moderation if unemployment is to be eliminated in conditions of sustainable economic growth. Real wages need to decline relative to productivity and therefore cannot afford to react much to an eventual fall in the rate of unemployment.

The flexibility of real labour costs may also be adversely affected by a growing share of non-wage labour costs as this strengthens the fixed cost component of total labour costs. Principal elements in the rising share of non-wage labour costs in

total compensation have been increases in employers' mandatory contributions to social security and contributions to private health and pension schemes.

B. Adaptability of relative labour costs across enterprises and occupations

Distinct from real labour cost flexibility at the macroeconomic level is the issue of adaptability of wage differentials. This type of flexibility has two dimensions: first, adaptability of wage differentials to changing relative scarcity of skills, and second, adjustment of wages to the earning power of individual firms. In both cases, it is important to distinguish, in principle, between *ex ante* flexibility and *ex post* movements in relative wage costs, depending on the extent to which *ex ante* changes in differentials give rise to shifts in employment that offset the initial change in differentials.

In the first case, flexibility means that the remuneration of skills and occupations should mirror supply and demand conditions in the relevant segments of the labour market. In the event of skill shortages and unfilled vacancies extra pay offers would be extended, while in conditions of excess labour supply of particular categories, wages should fall relative to the average.

Wages for low-skilled workers have often been raised in the context of solidaristic wage policies or institutional adjustments of minimum wages. Moreover, the supply price of labour or the reservation wage may have also increased in response to improved social security benefits. Furthermore, the spectrum of total labour costs tends to be narrowed by employers' contributions to social security which, in most countries, contain ceiling provisions. This makes low-paid persons particularly vulnerable to lay-offs in time of economic slack. Ceiling provisions may also generate disincentives for hiring young and unskilled persons in an upturn, except in exceptional cases where employers' contributions are fully shifted backwards into wages.

As will be shown below, wage differentials have frequently displayed inertia across the whole spectrum of wages. Low or narrowing wage differentials may imply a high degree of short-run aggregate real wage rigidity. For example, in countries with widespread wage indexation mechanisms containing flat-rate elements, a rise in inflation results in a decline in wage differentials. In the event of unchanged or increased productivity differentials, positive real wage gaps may appear in low productivity sectors adding to aggregate real wage rigidity. On the other hand, wage differentials may also be low or falling if labour mobility is high. As labour moves from low-wage to high-wage industries, low-wage jobs will be eliminated in sunset industries; there will be downward pressure on wages in sunrise

industries. Consequently, wage differentials need to be evaluated in the light of productivity differentials, labour mobility, relative price developments and wage bargaining procedures.

If it is thought that wage earnings need to reflect more closely the profit position of individual firms, the implication is that wages need to be lower in declining than in prosperous industries and that total payments to labour (consisting of contractual wages and "profit-sharing" elements) need to become more responsive to cyclical and structural changes. Consequently, the overall profitability of an enterprise would be reflected both in the remuneration of labour and in the return to the fixed capital embodied in the enterprise. Flexible wage behaviour in this sense lowers unemployment and reduces the speed of structural shifts of output and employment from declining to expanding sectors. But it serves to ease the unemployment problem if the rise in high-productivity (high-paid) jobs is insufficient to absorb labour otherwise released by low-efficiency firms.

C. Labour mobility

As noted above, the extent to which pay differentials are required to eliminate mismatches between the demand for and the supply of labour across regions, occupations and firms greatly depends upon labour mobility. **Regional mobility** may be hampered by a variety of socio-economic factors such as subsidized housing and depressed house prices in surplus labour regions, family ties, pension arrangements, immigration rules and job opportunities offered by the "hidden" economy, etc. **Occupational mobility** depends upon pay incentives to move to higher-skill jobs, disincentives to move out of low-skill jobs, training and re-training facilities and labour counselling services. **Inter-firm mobility** is influenced by the possibilities of intra-firm mobility and the hiring and firing practices and quit behaviour: lay-off rules, redundancy payments, the reservation wage, the requirement to offer permanent labour contracts, non-portable pension claims, etc. Finally, barriers to setting up new firms (e.g. lack of venture capital) and retarding the closure of old firms also affect labour mobility.

In a wider sense, the term "labour mobility" may relate not only to movements within a given labour force, but may also extend to changes from the active to the non-active component of the working-age population and vice versa. Labour mobility in this respect would be indicated by strong positive responses of participation rates to changing labour market pressures. This would serve to stabilise the rate of statistically recorded unemployed persons over the cycle and reduce the number of unfilled vacancies during cyclical upswings.

D. Flexibility of working time and work schedules

Greater flexibility in this area serves to meet growing demands for part-time work and job-splitting without generating cost increases if income sharing is accepted. The rise in female participation rates observed in most countries has been accompanied by a greater secular demand for part-time employment which has been largely accommodated in the service sector. Flexibility of working time may facilitate the introduction of shift work, six-day or continuous work week and hence help to lower capital costs or other fixed costs per unit of output, thereby raising output capacity and potential employment. Also, some non-wage labour costs and some job protection legislation may not apply to part-time work, e.g. payments to private insurance schemes and income floors for social security contributions.

III. INDICATORS OF LABOUR MARKET FLEXIBILITY

Given the different aspects of labour market flexibility it is impossible to construct a single meaningful measure of labour market flexibility. Nor is it easy to find satisfactory partial indicators for any of the four flexibility concepts identified in Part II. The following measures are therefore necessarily incomplete, sometimes ambiguous and often circumstantial in nature. While this raises issues of interpretation, some *insights* into international differences in the functioning and efficiency of labour markets may nevertheless be provided.

A. Indicators of aggregate labour cost flexibility

A raw material price increase typically causes a fall in output, total factor productivity, real wages and profits all of which adversely affect the capital stock and potential output over time (cf. Bruno and Sachs, 1982). In the case of energy-importing countries being exposed to an inflationary energy price shock with deflationary demand consequences, perfect real labour cost flexibility at the economy-wide level is present if real wages, together with other national income components, fall immediately and permanently, and if, moreover, they are adjusted downwards in response to supply-side induced declines in productivity. In this context, it is useful to recall that energy is both a consumption good (e.g. gasoline and heating oil) and a factor input into the production process. In the extreme case of infinite substitution elasticities of factor inputs, total input costs would remain unchanged provided money wages did not react to the direct impact on consumer

prices of increased energy prices. The initial terms-of-trade loss would then in part be transformed into a decline of labour and capital productivity as larger quantities of non-energy inputs would be needed to produce a given unit of output. Whatever the ultimate split between terms-of-trade losses and substitution-induced decreases in labour productivity trends, a full real wage adjustment is required. In the absence of such adjustments, aggregate real labour cost flexibility would also be indicated if real wages reacted quickly and strongly to a supply-shock-induced weakening of labour demand. In the first case (i.e. rapid real wage adjustments to terms-of-trade losses and productivity declines), a real wage gap would not occur; in the second one (i.e. initial real wage stickiness), it would occur, but only temporarily, as wages react strongly to labour market weakness.

Substitution elasticities are obviously less than infinite. In the special case of an energy price shock, the own short-run price elasticity of energy demand is typically found to be far below unity pointing to a small range of substitution opportunities (cf. Mittelstadt, 1983). Hence, total input costs are bound to rise over the short-run when energy prices surge. Furthermore, money wages will seldom remain unchanged when consumer prices rise in response to higher prices for electricity, natural gas, gasoline and heating oil. Consequently, the ultimate increase in production costs (stemming from the impact on money wages of higher energy prices to consumers, the impact on production costs of higher energy input prices and the impact on money wages of higher output prices) depends in part upon both the responsiveness of money wages to inflation and the reaction of money wages to rising unemployment (cf. Bruno, 1984).

1. Measures derived from aggregate wage equations

Ideally, a comprehensive aggregate wage flexibility indicator, tailored for the case of an inflationary supply shock, would consist of a three-pronged measure capturing wage earners' reactions to terms-of-trade losses, to induced trend breaks of productivity and to changed labour market pressure. However, since these three supply-shock-induced phenomena are not independent of each other, such a measure is both difficult to construct and even more difficult to interpret. One way of capturing at least the short-run terms-of-trade effect on money wages and the impact of reduced labour market pressure is to divide the short-run elasticity of money wages with respect to consumer prices (derived from money wage equations) by the elasticity of money wages with respect to the unemployment rate. Low values for the wage/price elasticity and high ones for the wage/unemployment elasticity indicate real wage flexibility and vice versa. Accordingly, countries with a low ratio could be classified as exhibiting real wage flexibility and those with a high

ratio as displaying real wage rigidity (cf. OECD, 1983a; Grubb, *et al.*, 1983; Coe, 1985).

In the situation of an energy price surge, the short-run elasticity of money wages with respect to inflation captures two effects: the direct impact of higher prices for gasoline, electricity, natural gas and heating oil on consumer prices; and the effect of higher energy prices on input costs feeding through to consumer prices. If money wages respond rapidly to the price effect, input costs (energy plus wage costs) will be further increased. Should employers find it difficult to transmit increased costs to selling prices (because of intense international competition) profitability would decline. For this reason, a high short-run price coefficient in money wage equations implies a widening of the real labour cost gap after external price shocks (cf. Sachs, 1983). The reaction to this profit squeeze naturally depends upon the initial level of profitability. If profitability is comfortably high, the rise in input costs relative to selling prices may be absorbed without major changes in factor demand. Conversely, if profitability is reduced to close to or below minimum acceptable levels, employers may attempt to cut input costs through labour shedding, this employment-decreasing effect overwhelming the employment-raising effect from labour-for-energy substitution. It follows that while countries' experience may be similar with respect to the longer-run consequences of price inflation for wages, the negative labour market impact will be more serious in countries with *initial* real wage rigidity. In these conditions, a spiral between external prices, money wages and domestic prices is set in motion, weakening competitive positions, depressing investment and calling for restrictive policy measures to be taken.

There is a different situation when money wages react slowly to the price effect of energy price shocks. In this case, there would be less rapid price-wage spiralling effects, less pressure on profits and fewer withdrawals of unprofitable capital vintages, thus reducing the need for labour shedding. When it takes longer for money wages to catch up with inflation, the adjustment profile will be different. In practice, an energy price shock is likely to produce a parallel rise in inflation and unemployment pointing to the importance of the second element of the "real wage rigidity measure", the semi-elasticity of money wages with respect to the unemployment rate.

This semi-elasticity measures the dampening effect on money wage inflation of a 1 percentage point increase in the unemployment rate. The rise in unemployment derives from various forces including a fall in optimal employment (a consequence of a reduced capital stock), a decline in private consumption expenditure for non-energy goods and services (reflecting the low short-run price elasticity of energy demand), a rise in the world's savings ratio, and, finally, restrictive anti-inflationary

policies accentuating the deflationary effect inherent in an energy-price induced fall in the terms of trade.

This measure of real wage flexibility is reported in Table 1. It is calculated as the short-run elasticity of money wages with respect to prices divided by the semi-elasticity of money wages with respect to the unemployment rate.

Table 1. **Real and nominal wage rigidity**

	Unemployment rate	Elasticity of nominal wages with respect to ^a			Real wage rigidity		Mean lag in the wage and price equations ^c	Nominal wage rigidity
		Prices		Unemployment rate ^b	Short run	Long run		
		Short run	Long run					
		1	2	3	4 = 1/3	5 = 4			6	7 = 4 x 6
United States	any	0.22	1.01	-0.33	0.67	3.06	5.00	3.35
Canada	any	0.31	0.95	-0.57	0.54	1.67	1.50	0.81
Japan	1.7	0.93	0.93	-3.31	0.28	0.28	0.50	0.14
	2.7			-1.31	0.71	0.71		0.35
Australia ^d	any	0.45	0.90	-1.78	0.25		3.00	0.75
		0.33	0.66	-0.48	0.69	1.38		2.07
Germany ^e	2.7	0.44	0.88	-0.25	1.76	3.52	2.00	3.52
	8.5			-0.08	5.50	11.00		11.00
					0.58	0.61		1.16
France	any	0.47	0.94	-0.31	1.52	3.03	3.00	4.56
United Kingdom	any	0.33	0.99	-0.17	1.94	5.82	2.50	4.85
Italy	any	0.96	0.96	-0.65	1.48	1.48	3.00	4.44
Austria	3.9	0.48	0.97	-0.58	0.83	1.67	3.00	2.49
	4.5			-0.50	0.96	1.94		2.88
Netherlands	5.1	0.47	0.94	-0.44	1.07	2.14	2.00	2.14
	14.0			-0.16	2.94	5.87		5.88
Switzerland ^f	any	0.52	1.04	-0.30	1.73	3.47	3.00	5.19
		0.01	0.53	-0.30	0.03	1.77		0.09

a) The elasticities are from the estimated wage equations reported in Table 1 in Coe (1985). The short-run price elasticity refers to the impact in the first half year. The unemployment semi-elasticity refers to the negative impact on wage growth (expressed at a semi-annual rate) of a 1 percentage point increase in the unemployment rate.

b) The unemployment rate enters the wage equations unlagged. For Japan, Germany, the Netherlands and Austria, the estimated Phillips curves are non-linear and so the semi-elasticity of nominal wages with respect to a 1 percentage point increase in the unemployment rate is baseline dependent. For these countries the semi-elasticity is calculated from the average unemployment rate in the estimation period (the first line) and also the unemployment rate in the first semester of 1984 (the second line).

c) The mean lags on inflation in the wage equations are 3.5 for the United States; 1.0 for Canada and the United Kingdom; 0 for Japan; and 0.5 for all other countries. The mean lags on the wage term in the price equations are 0.5 for Canada and Japan; 1.5 for the U.S., Germany, the U.K. and the Netherlands; and 2.5 for the other countries.

d) The first line is based on the equation which incorporates the hypothesis of hysteresis in the natural rate reported in Table 4; the second line is based on the standard Phillips curve reported in Table 1 in Coe (1985).

e) The estimates of wage rigidity reported in the third line incorporate a short-run productivity impact on nominal wages.

f) The calculations assume no change in short-run productivity. In the first line it is assumed that the real shock increases both consumer and output prices by 1 per cent; in the second line it is assumed that consumer prices increase by 1 per cent but that output prices remain constant.

Source: Coe (1985).

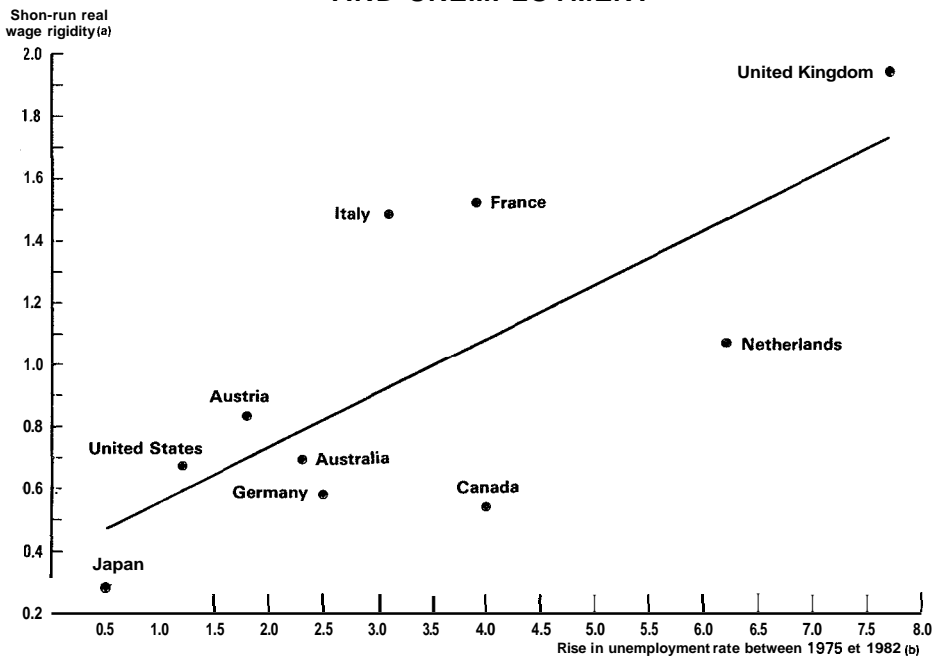
The estimated elasticities are obtained from a recent re-estimation of the Secretariat's wage equations for the private business sector (cf. Coe, **1985**). The following features emerge from Table 1:

- i)* Short-run price coefficients vary strongly between countries, being particularly low in the United States, comparatively high in European countries and highest in Japan and Italy;
- ii)* Over the longer-run, however, price-coefficients in all countries converge towards unity, as one would expect in the absence of money illusion;
- iii)* The semi-elasticity of money wages with respect to the unemployment rate also differs widely between countries with Japan showing the highest wage responsiveness and the United Kingdom the lowest. For the United States, the empirical results show a somewhat stronger reaction to changing labour market pressure than in three out of the four larger European countries, Italy being the exception:
- iv)* Combining the short-run price and the unemployment coefficient reveals a high degree of **short-run** real wage flexibility for the United States, Canada and Japan and comparatively lower values for European countries, notably the United Kingdom. Germany emerges as a country with "flexible" real wages because cyclical productivity growth appears as an explanatory variable in the money wage equation. While this specification is statistically superior to the traditional one, and appears to be consistent with institutional features of wage bargaining in Germany it may overstate the degree of real wage flexibility'.

Grouping countries according to their real wage rigidity measure, as shown in Table 1, and their unemployment rise between **1975** and **1982** reveals a positive correlation between the rigidity measure and the deterioration of the labour market situation (Chart 1)². This lends support to the hypothesis that a combination of external price shocks and **short-run** real wage rigidity has negative **longer-run** consequences for employment. This applies especially to the period between the two oil price shocks. A positive correlation also exists if the long-run measure in Table 1, i.e. inverse of the unemployment semi-elasticity, is taken as the sole flexibility criterion, but this statistical association is weaker.

It is emphasized that the flexibility indicator given above cannot be used as a general guide. Properties consistent with adequate real wage flexibility in the event of a stagflationary supply shock might indicate inappropriate real wage behaviour in the case of a disinflationary **demand** shock. Thus, rigidity of nominal wages in the face of unanticipated disinflation tends to push up real wages despite rising unemployment. Furthermore, if supply shocks induce a fall in productivity trends,

CHART 1
**SHORT-RUN REAL WAGE RIGIDITY
 AND UNEMPLOYMENT**



a) Short-run price coefficient divided by unemployment rate coefficient in linear specification (money wage equations).
 b) Percentage points.
 Source: Secretariat.

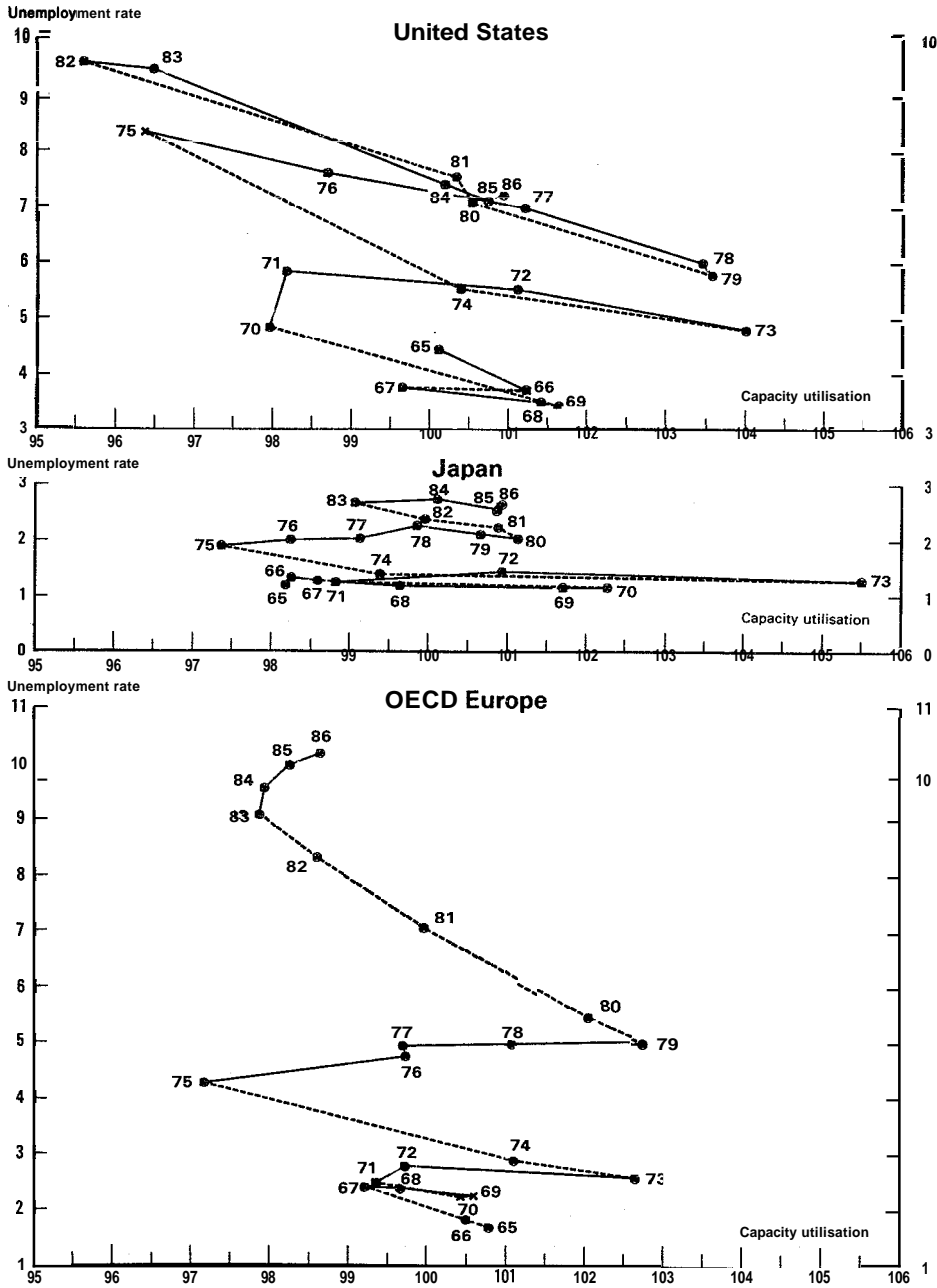
real wage flexibility would be indicated by a shift in the constant term of money wage equations, independently of the elasticities embodied in the above measure except in those equations which explicitly include a productivity variable; otherwise, the equilibrium level of unemployment would increase. Finally, the adjustment profile after OPEC 2 was different from post-OPEC 1 developments – a fact which requires careful interpretation (see below).

2. Other indicators

Another, and theoretically more satisfactory way of gauging the labour market responsiveness is to compare actual and some measure of "warranted" labour costs (cf. Artus, 1984 and Sachs, 1983). The latter is defined here as the level of real labour costs which would have stabilized the unemployment rate at the 1973-level

CHART 2

UNEMPLOYMENT RATES AND CAPACITY USE (a)



a/ Ratio of actual real GDP to phased trend.

Sources: Business surveys and Cyclical indicators. Labour force statistics

over the observation period if there had been no lack of demand at going prices or increases in labour market mismatches. Real labour cost flexibility can then be measured by the difference between actual and "warranted" real labour costs. This difference is not identical with the real wage gap defined as the difference between the real product wage and labour productivity levels. As discussed in Part II, this gap can be closed without a return to full employment (e.g. via cost-induced productivity gains). Computing "warranted" real labour costs requires specific assumptions about the aggregate technology, e.g. the rate of technical progress, its factor-saving bias and the elasticity of factor substitution.

Using for this purpose a specific production structure (a three-factor nested double production function with constant elasticities of substitution, recently developed by the Secretariat (cf. Helliwell, Sturm, Jarrett and Salou, 1986) and taking actual labour force participation rates, labour-augmenting technical progress and capital stock growth as given suggests that only France and Japan have seen persistent increases in real labour costs in excess of "warranted" labour cost growth. For the other countries the evidence is mixed: real labour cost growth exceeded the "warranted" rate after the first oil price shock but gradually fell below that rate after the second oil price rise³. The United States stands out as the only country to have experienced a persistent "short-fall" of actual from "warranted" labour cost levels⁴.

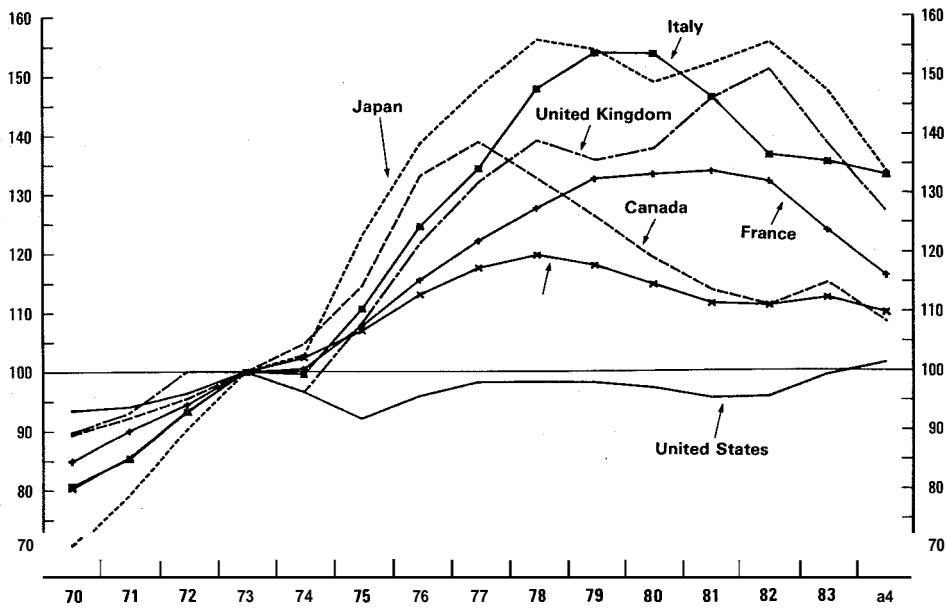
As noted above, the failure of real product wages to adjust promptly to reduced productivity growth is likely to have generated a mismatch between the (growing) labour force and the economically-viable capital stock. Indeed, as discussed in the *OECD Economic Outlook 37*, June 1985, there has been a near-universal deterioration in the relationship between unemployment and capacity use, reflected in an upward shift in the "Okun-curve" (Chart 2). Only a small part of this shift seems explicable in terms of increased frictional unemployment or stronger labour supply developments. Consequently, the implied factor supply mismatch prevailing in periods of high capacity use (at given input and output prices) may be taken as an indirect indicator for real labour cost rigidity. Labour cost growth has been excessive relative to both capital costs (favouring capital-for-labour substitution) and output prices (squeezing profits and, hence, accelerating scrapping and discouraging job-creating investments).

The apparent mismatch between the size of the labour force and the viable capital stock is particularly large in Europe. Relative labour costs in Europe have risen faster than in the United States (Chart 3); investments have largely been of the capital-deepening type; and profit margins have been squeezed during most of the post-1973 period, again in sharp contrast to the United States' experience. As can be seen from Chart 4, real labour cost growth in Europe began to moderate only

CHART 3

RELATIVE PRICE OF LABOUR IN SEVEN MAJOR OECD COUNTRIES (a)

(1970-1984) 1973 = 100



a) Index of compensation of employees in the private sector divided by index of use cost of capital.
Source: Secretariat.

after the second oil price shock under the combined influence of high (and rising) unemployment and restrictive policies. This development coincided with continued strong increases in labour productivity. In these conditions, the real labour cost gap narrowed, eventually disappearing in 1984 (Chart 4), while further upward shifts in the Okun-curve occurred (Chart 2).

3. Possible changes in wage flexibility

Despite real wage moderation, European unemployment rates after OPEC 2 generally rose much more steeply than after OPEC 1. Given broadly unchanged increases in labour supply, the behaviour of employment in a setting of real wage moderation and weak output growth warrants closer examination:

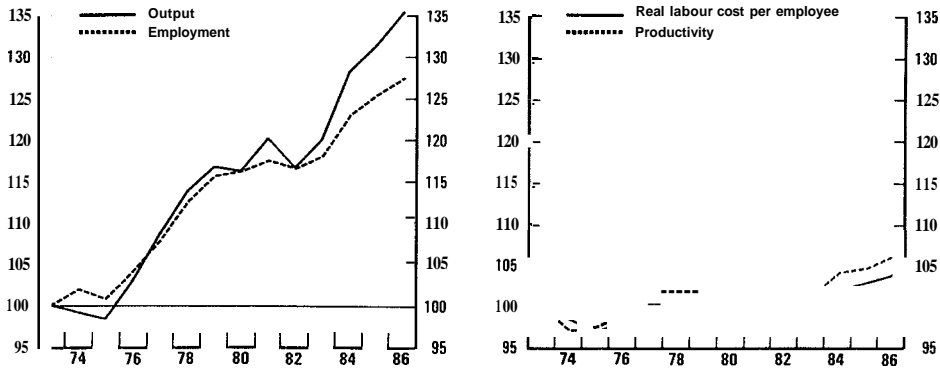
- i) Is the fall of real wages relative to labour productivity after OPEC 2 a sign of enhanced real wage responsiveness to changing labour market conditions or a normal cyclical feature?

CHART 4

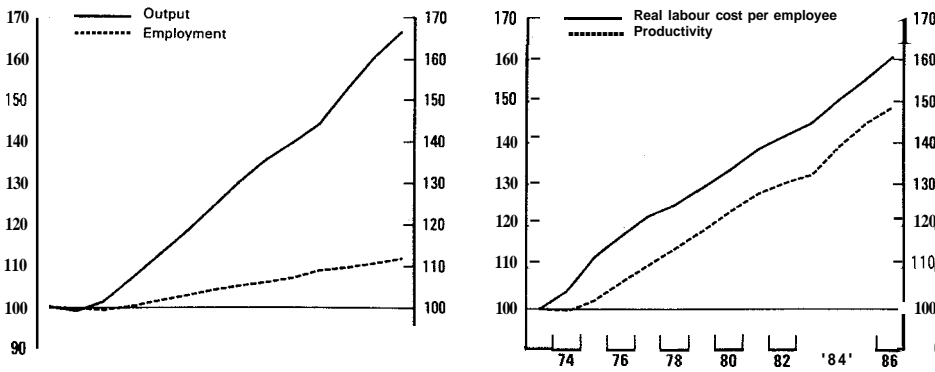
OUTPUT, EMPLOYMENT, PRODUCTIVITY AND REAL LABOUR COSTS PER EMPLOYED PERSON [a]

1973 = 100

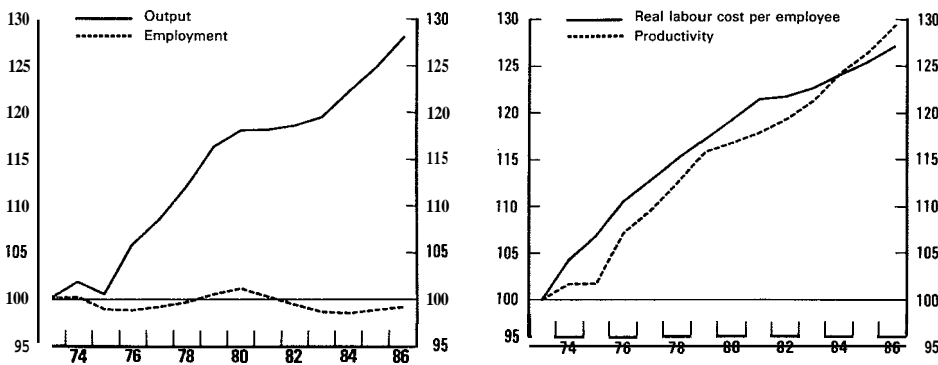
United States



Japan



OECD Europe



a) Compensation of employees per employed person deflated by GDP deflator.

b) France, Germany, Italy, United Kingdom.

Sources: Annual national accounts and Labour force statistics.

- ii)* If evidence can be presented that points to decreased real wage rigidity in Europe, what factors would then explain the sharp rise in unemployment after OPEC 2?

In order to examine the hypothesis that wage behaviour since OPEC 2 has become less rigid, the money wage equations used to construct the measures of real wage rigidity reported in Table 1 have been estimated for a period just before the second oil price shock. Out-of-sample *fex-post* forecasts were then made for the post-OPEC 2 period (cf. OECD, 1985c). For France and the United Kingdom, changes in money wages after OPEC 2 were consistently lower than "predicted" on the basis of out-of-sample forecasts. For France, there is evidence of an increased elasticity of money wages with respect to unemployment. For the United Kingdom, the empirical results suggest that changes in the rate of unemployment may be considerably more important as an explanatory variable than the actual level of the unemployment rate. For Germany, the degree of overprediction of money wage changes is comparatively small. In contrast, for Italy, changes in money wages were much larger than the predicted value, suggesting that the wage-restraining influence of high unemployment may have diminished over time.

Given that in three out of four major European countries money wages have risen less in recent years than indicated by previous relationships, the prolonged European employment weakness after OPEC 2 cannot be attributed to persistent real wage rigidity. The explanations must therefore be sought elsewhere. Three, partly interrelated, factors appear to have played an important role:

- i)* Downward revisions of medium-term output expectations leading to reductions in required labour inputs, i.e. decreased labour hoarding;
- ii)* Lagged adjustments to previous sharp increases in real and relative labour costs implying intensified rationalisation efforts; and,
- iii)* The rise in real user costs of capital after OPEC 2 contributing to a pure profit squeeze, thereby reinforcing the shake-out of labour and discouraging investment.

After OPEC 1, real user costs of capital fell in line with capital productivity. Profit shares also decreased. Hence the rate of return on capital declined under the twin influence of falling profit shares and decreasing capital productivity. But real capital costs fell less than the rate of return on capital so that the pure profit rate (i.e. the difference between the rate of return on capital and the real long-term interest rate) declined.

In contrast, after OPEC 2 real user costs of capital increased, while the rate of return on capital fell solely under the influence of reduced capital productivity, this effect being cushioned by rising profit shares. Together with rising real costs of

capital this lowered pure profit rates further. Faced with depressed profits and a sustained weakness of aggregate demand, employers in Europe were forced increasingly to economise on variable or quasi-fixed inputs of production (cf. Blanchard *et al.*, 1985). In this unusual setting, a labour market shake-out occurred in Europe at a time of emerging real wage moderation, signs of an easing of labour market rigidities and a sharply reduced rise in the price of labour relative to the price of capital. Chart 1 needs to be interpreted in the light of these considerations.

It is worth noting that an upward shift in the Okun-curve necessarily implies a rise in both the rate of unemployment at full capacity use and the non-accelerating inflation rate of unemployment (NAIRU) as potential output is constrained by capital rather than by labour⁵. As a result, a given level of demand, and hence inflation, is associated with higher unemployment. Indeed, according to a number of recent estimates the NAIRU generally increased after 1973, especially in Europe (cf. Layard *et al.*, 1984; Coe, 1985; Braun, 1984). Relative price changes caused by the two oil price shocks and the rise in capital costs after OPEC 2 transcended customary limits, thereby strengthening the need for structural change and revealing latent input price rigidity. In these conditions, the NAIRU has tended to follow the actual unemployment rate. However, while its increase cannot be viewed as a sign of increased labour market rigidity, it underlines the contribution that further decreases in real wage rigidity could make to bringing unemployment down in relation to high levels of capacity use (cf. Emerson, 1984).

The different behaviour of money wages in the *United States* is often attributed to the prevalence of multi-year wage contracts in the unionised sector, a comparatively low degree of unionisation (especially in the private service sector where the bulk of employment creation has occurred), related decentralised wage bargaining, and a rapid inflow into the labour force of young persons and women prepared to accept employment at low wages. indeed the low impact elasticity of wages with respect to prices was the prime reason for a relatively high degree of real wage flexibility for the United States in Table 1. In 1983 only 58 per cent of union contracts in the United States included cost-of-living adjustments, offering protection against only one-half of changes in consumer prices. Increases in money wages began to fall short of "predicted" values after the 1982 recession. Comparing the equation estimated to mid-1979 with a comparably specified equation estimated to the end of 1984 suggests for the United States that the transmission of failing inflation to money wages has quickened and that money wages have become more responsive to unemployment (OECD, 1985c; Gay, 1984).

As regards *Japan*, economic and institutional conditions differ greatly from those in the United States and Europe. Indeed, Japan has seen a continuous excess

of real labour costs per employed person over aggregate productivity and exceptionally strong rises in the price of labour relative to that of capital (Charts 3 and 4). At the same time, however, total employment continued to grow throughout the 1970s and early 1980s and there was only a small rise in the measured unemployment rate from a very low level.

These developments, which include some puzzling features, may in part be explicable by the fact that productivity growth in Japan, exceptionally strong in the sixties, was bound to weaken for structural reasons, largely reflecting a smaller scope for catching-up processes. Hence, productivity gains and the scope for real wage increases would have declined even in the absence of external price shocks. Perceptions of this structural change, however, were slow in coming, causing real wages to rise faster than productivity. It is also arguable that the marginal product of labour has risen more rapidly than average productivity making room for large wage

Table 2. Non-wage labour costs
As a percentage of compensation of employees, total economy

	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983
Employers' contributions to social security schemes											
United States	3.3	3.8	4.9	5.1	5.2	5.4	5.6	5.5	5.7	5.7	5.9
Japan	4.6	5.3	6.1	6.0	6.4	6.8	6.8	7.0	7.4	7.6	7.5
Germany	9.3	10.3	12.3	12.9	13.0	12.9	13.0	13.0	13.3	13.8	13.9
France	18.2	19.1	20.5	20.8	21.2	21.4	22.0	22.2	22.1	22.6	23.2
United Kingdom	3.9	4.4	5.9	6.5	6.6	6.1	6.0	6.1	6.0	6.0	6.3
Canada	2.0	3.1	3.8	4.0	3.9	3.9	3.8	3.7	4.1	4.1	4.7
Italy	16.2	17.3	18.9	18.9	18.3	18.2	17.7	17.6	16.9	17.1	..
Belgium	12.9	13.9	14.8	14.4	14.7	14.2	14.4	14.3	13.8	13.2	13.6
Finland	12.5	13.9	16.8	17.8	18.9	18.6	18.4	18.5	18.3	18.1	17.6
Netherlands		13.2	15.3	15.4	15.4	15.3	15.7	15.8	16.0	16.0	16.8
Sweden	5.4	7.9	13.2	16.7	18.5	19.7	19.9	21.2	22.4	21.3	21.8
Switzerland	3.3	3.7	5.0	5.1	5.3	5.6	5.6	5.4	5.3	5.3	5.3
Employers' contributions to private pension insurance											
United States	5.8	7.0	9.4	9.9	10.3	10.4	10.4	10.7	10.7	11.2	11.6
Japan	2.7	3.2	3.2	3.5	3.8	3.9	4.2	4.2	5.0	5.0	5.3
Germany	3.9	4.4	5.0	5.1	4.8	5.0	5.2	5.3	5.3	4.9	5.0
France	5.5	5.0	5.0	5.0	5.0	5.2	5.0	5.0	5.0	5.1	5.0
United Kingdom	4.1	4.7	6.0	6.7	6.9	7.2	7.2	7.2	7.9	7.7	7.6
Canada	2.6	2.5	3.2	4.2	4.7	5.0	5.0	4.8	4.9	5.3	5.1
Italy	9.0	10.5	9.5	10.1	8.1	8.3	8.6	8.5	8.5	8.5	..
Netherlands	..	6.1	6.9	7.0	7.3	7.2	7.2	7.3	7.1	6.8	7.0
Sweden	4.9	5.2	6.5	5.9	6.1	6.6	6.4	5.9	5.5	6.4	6.1
Switzerland	7.1	7.2	7.1	7.1	7.0	7.0	7.2	7.4	7.5	7.4	7.5

Source: OECD, National Accounts.

increases (cf. Suzuki, 1985). It seems likely though that the negative employment effects flowing from too rapid a rise in the labour costs have been cushioned by a comfortable, though declining, level of profitability (cf. Henderson, 1984).

Apart from institutional and structural features governing the wage-determination procedure, aggregate real labour cost flexibility also depends upon the size, composition and evolution of non-wage labour costs. To the extent that these costs are not proportional to wages they introduce elements of fixity into the cost of labour. Furthermore, since such costs are probably not fully shifted back onto labour in the short or medium-run, they impart an upward bias to average real labour cost. Over the past twenty years over-proportionate increases in non-wage labour costs have occurred in virtually all OECD countries, reflecting institutional, structural and cyclical forces (Table 2) (cf. Hart, 1984). This has been largely connected with increases in *statutory* employers' contributions to social security schemes, especially in Europe. After the first oil price shock in particular, such tax increases were part of government efforts to stem the rising tide of social security deficits. Taking place at a time of rising inflation and rising unemployment, the cyclical sensitivity of labour costs was, at least temporarily, lowered, reinforcing the adverse employment effects.

In contrast to employers' contributions to social security, *private* or voluntary payments to insurance schemes are more likely to be shifted backwards as they are recognized as part of the long-run supply price of labour. For this reason, a rising share of voluntary or contractual non-wage labour costs may have little, if any, implications for aggregate real labour cost flexibility. It is possible, though, that by way of promoting job attachment this type of labour cost has lowered quit rates thereby reducing labour mobility (cf. Ragan, 1984).

B. Indicators of adaptability of cost differentials

Measures of compensation of employees conceal a wide range of industrial, occupational and firm-specific wage contracts. Consequently, the indicators for aggregate real labour cost flexibility discussed above are subject to a variety of micro-economic influences. These include changes in sectoral or enterprise labour cost differentials and corresponding productivity differentials. The dispersion of labour costs typically depends upon the characteristics of wage bargaining, the scope and structure of wage indexation mechanisms, labour mobility and institutional features relating to entry wages, e.g. minimum wages, unemployment insurance benefits, taxation and other non-market factors such as lay-off restrictions which bear on the employers' propensity to hire.

Table 3. Coefficient of variation of inter-industry wages 1965-1982

Per cent

	Number of sec- tors	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	Average 1965-82
United States	16	22.1	22.2	21.7	21.5	22.1	22.6	24.0	24.7	25.1	25.0	25.1	25.3	25.8	25.8	25.8	25.8	26.3	26.4	24.3
Japan	14	..	..	..	..	..	..	..	23.6	22.6	24.7	26.1	25.8	26.1	25.2	24.7	25.4	25.8	27.0	25.2
Germany	16	13.2	12.4	13.3	13.1	14.2	14.3	14.2	14.0	14.1	14.6	14.7	14.6	14.8	14.3	14.2	14.6	14.2	14.4	14.1
France	15	..	..	19.6	16.4	16.3	16.6	15.8	15.5	15.2	14.1	14.7	15.1	14.9	14.3	14.4	14.0	13.6	13.7	15.3
United Kingdom	16	16.9	16.3	15.8	16.6	17.2	17.6	17.2	17.2	16.5	14.7	15.4	14.7	13.4	14.1	14.2	15.8	17.1	17.4	16.0
Italy	16	22.6	21.5	22.5	21.5	22.0	23.3	20.5	19.2	18.4	16.7	16.3	13.4	10.8	12.7	12.4	11.8	11.4	10.5	17.1
Canada	16	22.1	21.7	21.7	21.9	21.6	22.8	23.3	23.7	23.7	23.3	22.8	23.0	23.6	23.4	23.6	24.0	24.8	25.7	23.1
Sweden	16	16.1	15.2	14.8	14.2	14.0	13.8	12.9	11.9	12.1	11.9	12.1	11.7	11.7	10.7	10.8	10.8	10.6	10.0	12.5
Netherlands	16	..	..	15.7	15.4	14.9	14.4	14.4	14.4	13.1	12.6	12.1	..	..	12.6	..	..	..	..	..

28

Note: The coefficient of variation is calculated as the standard deviation (using unweighted squared deviations from the mean) divided by the arithmetic mean. For each country the calculations are based on hourly wage earnings for time worked for manufacturing industries, except for Japan where only total labour costs are available.

Source: Swedish Employers' Confederation.

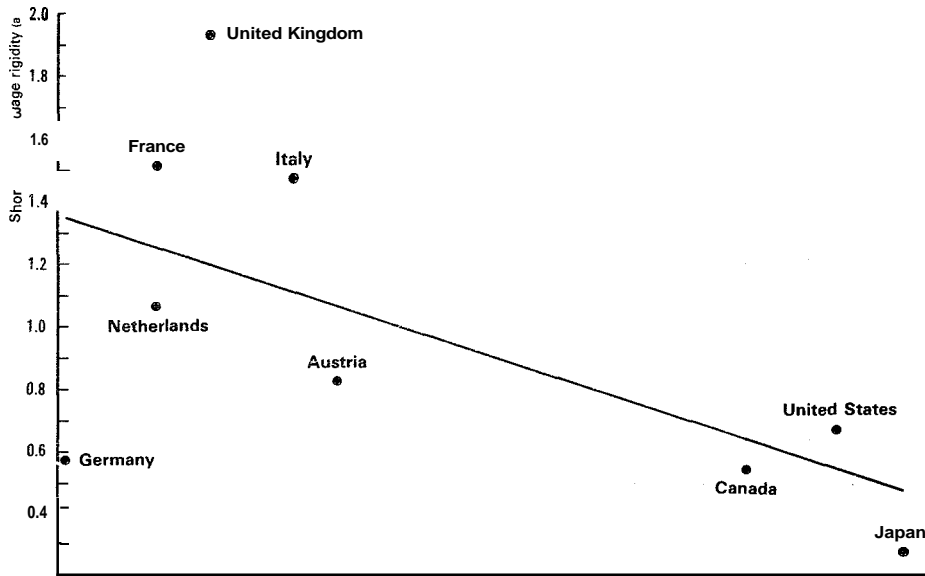
Unfortunately, detailed internationally comparable data on the spectrum of productivity and labour cost differentials are not available. In the following, two sets of data on pay differentials are examined: *inter-industry* differentials relating to hourly wage costs (earnings for time worked) and differentials between total labour costs per employed person in main *economic sectors* (including services and the Government sector). Matching productivity data only exist for these latter sectors, not for the industrial subsectors.

Table 3 presents inter-industry wage differentials (measured by the coefficient of variation) for the 1965-82 period. Four features stand out:

- i)* The spread between industrial wage levels has been wide by international comparison in the United States and Japan, but small in several European countries (Germany, France, the United Kingdom and particularly Sweden);
- ii)* In countries with an initially wide spectrum of industrial wage levels, differentials widened over time (except in Italy), while they narrowed in some of the countries having had a comparatively small spread between wages in the early 1970s (France, the United Kingdom and Sweden);
- iii)* Plotting the average coefficient of variation for the 1965-82 period against empirically-determined degrees of short-run real wage rigidity (based upon the wage equations in Table 1) reveals a negative, though weak, statistical association (Chart 5), i.e. countries with narrow wage differentials generally have a high degree of short-run real wage rigidity and vice versa. Main exceptions are Germany and the United Kingdom. For Germany a low measure of real wage rigidity is found despite narrow wage differentials. Part of the explanation may lie in a statistical bias (understatement of real wage rigidity). In contrast, for the United Kingdom a much higher measure of real wage rigidity is found than for countries with comparable industrial wage differentials. This largely reflects the unusually low elasticity of money wages with respect to the level of unemployment – a sign of pronounced labour market segmentation.
- iv)* In countries with flexible real wages, industrial wage differentials have widened (United States, Japan, Germany and Canada), while they narrowed in some countries with more rigid real wages (France, Italy and the Netherlands). In the case of the United States, money wages in non-unionised industrial sectors may be typically less responsive to inflation than in unionised sectors. Since wages in the latter are relatively high, rising inflation leads to a widening of wage differentials. In contrast, cost of living adjustments in Europe have often included flat rates, implying a narrowing of wage differentials when inflation accelerates.

CHART 5

REAL WAGE RIGIDITY AND WAGE DIFFERENTIALS



a) See table 1.
b) See table 3

Average inter-industry wage differentials (1965-1984) (b)

Examining inter-sectoral labour cost differentials (labour costs per employed person) confirms the picture of narrowing pay differentials in most European countries (except Germany and Norway, Table 4) and a widening in the United States and Canada. But, in contrast with inter-industry wage differentials, France and Italy exhibit an average coefficient of variation far higher than that for the United States and Japan. This seems to be partly related to a high dispersion of sectoral net value added per employed person.

There are a number of *microeconomic* variables which are frequently cited as having had adverse effects on labour cost relativities, prominent among them being the minimum wage, relative youth wages, unemployment insurance payments and non-wage labour costs. These factors are alleged to have pushed up the reservation wage relative to average wages, with consequent attempts by wage earners with long-tenure wage contracts to restore earlier wage relativities.

As regards the minimum wage, the view is often held that its relative increase tends to reduce employment for young people, women and low-skilled labour,

Table 4. Coefficient of variation of intersectoral labour costs^a

Per cent

	Number of sectors	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	Average
United States	10	30.8	31.2	31.5	31.2	31.5	32.9	33.6	33.7	33.7	33.4	33.8	34.3	34.9	35.3	32.9
Japan	11	25.0	25.7	25.8	25.1	25.4	26.0	26.3	24.5	24.3	25.5	24.6	25.5	25.8	27.8	25.5
Germany	8	18.8	19.1	18.7	19.5	19.8	20.6	20.1	20.5	20.9	22.0	22.3	22.7	22.1	..	20.6
France	9	60.5	56.9	55.9	54.3	52.6	57.2	50.3	49.7	49.4	51.0	..	..	..	..	53.8
United Kingdom	7	44.8	43.8	43.3	43.1	43.6	44.9	44.0	44.3	44.7	44.1	42.7	42.3	42.6	42.9	43.7
Italy	9	50.7	50.8	50.9	50.0	47.0	46.3	44.2	41.4	40.5	41.0	39.5	39.3	38.8	38.6	44.2
Canada	10	21.4	21.4	21.2	23.1	24.5	25.1	22.8	22.9	20.3	22.5	23.1	24.3	28.7	..	23.2
Denmark	11	27.3	24.8	22.8	22.5	21.7	20.9	19.6	19.2	18.6	11.2	16.3	19.5	20.5	21.1	20.9
Finland	10	19.6	17.5	16.7	15.4	15.2	13.5	11.9	11.5	10.8	10.1	8.9	8.9	9.3	9.7	12.8
Norway	10	20.5	20.1	20.3	20.7	20.8	21.1	21.3	21.8	22.8	24.0	28.1	28.9	29.0	30.3	23.5
Sweden	11	19.8	20.2	20.2	20.4	19.4	17.9	17.1	15.8	15.0	16.1	16.0	16.2	16.4	17.3	17.7

a) Compensation per employee in: Agriculture, Mining, Manufacturing, Electricity & Gas, Construction, Trade & Hotels, Transport & Communication, Business Services & Real Estate, Other non-government services, Government Services and Other producers (i.e. domestic servants & private non-profit institutions).
Source: OECD. National Accounts.

especially when they are employed in export industries. This view is partially supported by empirical research (cf. Moy and Sorrentino, 1981 and Martin, 1983). The empirical evidence also suggests that participation rates for those groups most affected by the minimum wage remain unchanged or even fall when the minimum wage is raised. On balance, judging from the empirical results, the demand effect has outweighed the labour supply effect, but the net effect on unemployment is found to have been small, accounting for only a fraction of the post-1974 rise in unemployment in countries where minimum wage regulations apply.

Connected with the issue of minimum wages is the question of the appropriateness of youth wages. In the 1970s several countries (Germany, France, the United Kingdom, Sweden and Australia) experienced a marked deterioration of the relative labour market position of youth as manifest in a rising ratio of youth-to-adult unemployment rates (Table 5). This trend prevailed throughout the decade for Sweden, Australia and France. In contrast, the United States and Japan witnessed an improvement of youth's relative labour market position, while it was initially steady in the case of Canada.

Table 5. **Ratio of youth to adult unemployment rates**

	1970	1975	1980	1983	1984
United States	3.1	2.5	2.7	2.2	1.8
Japan	2.0	1.8	1.9	1.9	1.8
Germany	0.8	1.5	1.4	1.5	1.2
France	2.3	2.8	3.6	3.7	2.8
United Kingdom	1.4	3.0	3.1	2.6	1.9
Canada	2.4	2.4	2.4	2.1	1.6
Australia	2.1	3.0	3.4	2.5	1.8
Sweden	2.4	3.2	3.6	3.1	1.9
Italy			3.4	3.2	3.3

Source: OECD, *Employment Outlook*, September 1985, pp. 18-19.

At the same time, youth wages have shown substantial increases relative to those of adults in France, the United Kingdom, Sweden and Australia, indicating that they may have played some role in the worsening of youth's relative labour market position. In Germany, the youth/adult wage differential has been steady over time, which has not prevented youth unemployment from rising relative to adult unemployment even though from low levels. This points to some rigidity for relative youth wages. On the other hand, the situation in the United States has been marked by flexibility of youth wages, evident in the deterioration of youth's relative earnings

and the concomitant improvement of its labour market position (cf. OECD, 1984b).

In addition to minimum wages, the "reservation wage" or the supply price of labour also depends upon *unemployment insurance provisions*. These include coverage, eligibility, the replacement ratio, work tests, the length of the benefit period and the profile of the replacement ratio within this period. It is generally agreed that increases in unemployment compensation relative to average wages tend to lengthen the duration of spells of unemployment and stiffen wage bargaining attitudes (cf. OECD, 1982). But the intensity of this effect is usually hard to identify empirically, largely because of the difficulty of quantifying the impact on unemployment flows of changes in eligibility provisions, work tests and the length of the benefit period. Moreover, given compositional changes over time in the pool of unemployed persons, it is difficult to define a representative replacement ratio in aggregate studies. For these reasons, data on changes in average unemployment benefits relative to average wages need to be interpreted with considerable caution.

Unemployment benefits per unemployed person as a percentage of the net income of average production workers fell in the 1970s in the United States, Germany, United Kingdom, Canada (after 1972), Belgium and Finland but increased in Japan, France, Italy, Austria, Norway, Sweden and Australia (Table 6). These data do not lend support to the notion that reservation wages have generally risen relative to average wages and salaries, a conclusion shared by recent research

Table 6. Unemployment replacement rates^a

	1972	1981	1983
United States	0.20	0.15	0.17
Japan	0.31	0.36	0.32
Germany	0.74	0.64	0.48
France	0.34	0.41	0.34
United Kingdom	0.43	0.28	0.27
Italy	0.11	0.16	0.18
Canada	0.81	0.53	0.52
Austria	0.55	0.57	0.49
Belgium	0.83	0.73	
Finland	0.32	0.18	0.22
Norway	0.18	0.32	0.45
Sweden	0.31	0.49	0.62
Australia	0.08	0.24	0.27

a) Unemployment benefits per unemployed person as a percentage of net income of average production worker.

Sources: 1. Unemployment: OECD, Labour Force Statistics.
 2. Unemployment Benefits: OECD, Public Expenditure (1960-1990) and revised data.
 3. Net income of average production worker: OECD, The Tax/Benefit Position of Production Workers (1979-1983).

(cf. Maddison, 1983, and P. Saunders *et al.*, 1985). It is worth mentioning that the average gross unemployment **benefit/earnings** ratio for the United States has been considerably lower than in most European countries, reflecting lower benefits and shorter benefit periods. Under European legislation, cut-off dates are usually longer (cf. OECD, 1984b).

In reply to a recent questionnaire by the EEC Commission, Germany, France, Greece and Ireland stated that the unemployment insurance system was not generally considered as a source of labour market rigidity (cf. EEC, 1984). Belgium and Denmark emphasized the positive relationship between unemployment benefits and employers' willingness to lay off employees, i.e. employers are more willing to lay off people in conditions of high, rather than of low institutional replacement ratios. In the United Kingdom rigidities created by the unemployment insurance system are thought to have eased following cuts in benefits for the short-term unemployed after the second oil price shock and subsequently making benefits taxable. In the Netherlands, however, high replacement ratios for the lower paid are viewed as having aggravated the unemployment problem.

Labour cost differentials are also affected by **non-wage labour costs**. Two countervailing influences can be distinguished: due to ceiling provisions statutory employers' contributions to social security schemes tend to reduce labour cost differentials except at the low end of the wage scale where "minimum earnings" are sometimes exempt from such taxes. In some countries, this effect has weakened over time owing to increases in ceilings relative to averages wages and salaries. In contrast, privately incurred non-wage labour costs (e.g. payments by employers to private insurance schemes, firms' investment in human capital) often constitute a higher share of labour costs for high than for low wage earners, thus tending to widen labour cost differentials (cf. Hart, 1984). In the absence of detailed information it is hard to establish the net effect of these opposing forces. But both components may introduce fixed-cost elements into the use of labour. The fixed-cost component is comparatively strong for skilled, high-paid and permanent employees and weak for unskilled and low-paid persons with temporary work contracts. Hence, non-wage labour costs may reinforce the segmentation between skilled and unskilled workers.

Apart from the factors discussed above, changes in sectoral wage differentials are also determined by the speed with which **female wages** rise relatively to male wages. Data for adult wages in manufacturing suggest a strong rise in relative female wages during the 1970s for the United Kingdom, Italy, Denmark, the Netherlands, and Norway (Table 7), partly reflecting equal pay legislation and the acquisition of greater skills. Japan stands out as the only country where the ratio of female to male wages in manufacturing fell in this period, accentuating the widening

	Ratio of female to male unemployment rate				Ratio of hourly female adult wages to male equivalent ^a			
	1973	1975	1983	1984	1971	1975	1981	1982
United States	1.50	1.22	0.96	1.06				
Japan	0.85	0.85	0.96	1.04	0.53 ^b	0.51 ^b	0.49 ^b	0.49 ^b
Germany	1.33	1.22	1.24	1.24	0.70	0.72	0.73	0.73
France	3.00	2.21	1.76	1.64	0.76	0.76	0.76	0.78
United Kingdom	0.31	0.33	0.59	0.64	0.58	0.66	0.68	0.68
Italy	2.78	2.84	2.46	2.58	0.76	0.80	0.85	0.86
Canada	1.37	1.33	0.97	1.03				
Belgium	1.74	2.06	1.83	..	0.68	0.71	0.71	0.72
Denmark	1.57	1.09	1.15	..	0.77	0.84	0.86	0.85
Finland	0.92	0.91	0.98	1.03	0.71	0.73	0.76	0.77
Netherlands	0.75	0.87	0.94	..	0.61	0.73	0.75	0.75
Norway	2.40	1.53	1.31	1.14	0.75	0.78	0.83	0.84
Sweden	1.27	1.62	1.03	1.10	0.85	0.85	0.89	0.90
Average (unweighted)	1.52	1.39	1.24	1.25	0.70	0.74	0.76	0.76

of inter-industry wage differentials. In Germany, a moderate improvement of women's relative earnings position coincided with a rising trend for inter-industry wage differentials.

C. Indicators of labour mobility

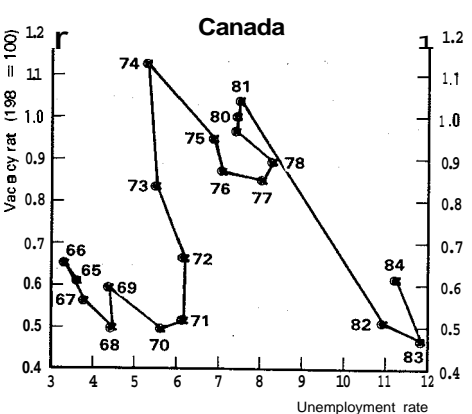
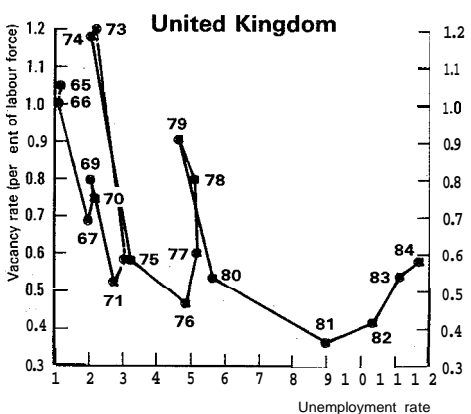
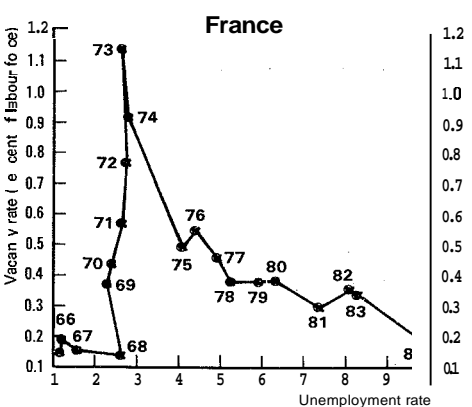
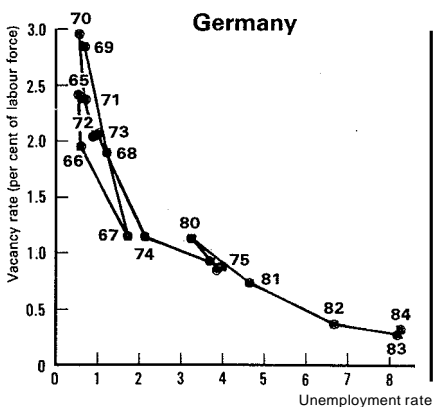
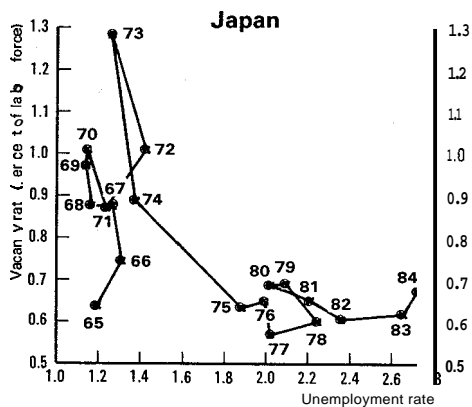
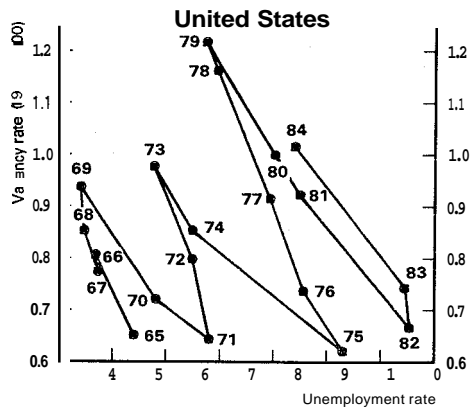
The degree of labour mobility and changes over time may be gauged by examining hirings, lay-offs, quits, tenure rates and mismatches between the demand for and the supply of labour as measured by vacancy/unemployment relationships. Analysing gross employment flows for four major OECD countries (United States, Germany, the United Kingdom and Italy) the following features emerge (cf. OECD, 1984c):

- i) There has been a general trend fall in quit rates primarily reflecting declining job opportunities and greater job attachment in an era of higher unemployment. This fall may have also been associated with increased non-wage benefits, rising home ownership and multi-earner households;

CHART 6

VACANCY AND UNEMPLOYMENT RATES

(Beveridge curves)



- ii) There has in contrast been an upward trend in lay-offs, which in the case of the three major European countries set in later than in the United States;
- iii) Whereas Europe suffered from a decline in hirings which was stronger than the decline in separations (i.e. quits and lay-offs), the United States experienced a strong rise in hirings in the service sector which more than offset the rise in lay-offs. Hence, increased European unemployment was associated largely with reduced hirings, while the rise in U.S. unemployment during the 1970s primarily reflected increased lay-offs. The combination of a trend decline in separations (quits and lay-offs) and hirings in Europe points to a fall in labour mobility.

In Europe the fall in hirings was probably mainly connected with depressed output expectations and possibly also with restrictions placed on employers' freedom to adapt employment. In contrast, the rising trend in hirings and lay-offs in the United States may be viewed as a sign of inter-firm and inter-regional mobility of labour as well as low reservation wages. Note that in the United States average job tenures are typically shorter than in Europe (cf. OECQ, 1984b). In addition, the mean duration of unemployment during the recent recession was only about four months compared with a range of seven to ten months in Europe.

Another possible, though indirect, indicator of labour mobility, which must, however, be used with considerable caution, is the relationship between vacancy and unemployment rates. On the strong assumptions that the rate of structural shifts (and hence the required rate of labour reallocation) has not changed and that search time needed, claimed or used for finding jobs and filling vacancies has not lengthened, increased labour market mismatches are indicated if vacancies and unemployment rise simultaneously. Inspecting the "Beveridge curves" for twelve OECD countries points to outward shifts since the late sixties or early 1970s in several countries, most visibly in the case of the United States (Chart 6). However, given the notorious unreliability of vacancy statistics and major changes in reporting practices (France), there is little support for the notion that labour market mismatches have universally increased.

D. Indicators of flexibility of working time and work schedules

Most countries have seen a rapid expansion of recorded part-time employment in the 1970s relative to total employment. But the speed of this increase has differed strongly among countries. In the United States, part-time employment covered about 17½ per cent of the rise in overall employment from 1973 to 1981.

Table 8. Contributions of full- and part-time employment to employment changes

	Change in employment, 1973 to 1981 (thousands)					
	Both sexes		Men		Women	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
United States	10274	2158	3553	437	6720	1720
Japan	3010	1150	1980	190	1050	960
Germany	-270	685	-158	1	-112	684
France	493	540	169	64	324	476
United Kingdom	-626	-86	-918	-67	292	-19
Italy	2120	-154	747	-111	1373	-43
Canada	1085	485	447	110	638	375
Belgium	-117	127	-122	21	5	106
Denmark	46	112	-19	13	65	99
Finland	73	17	26	4	47	13
Ireland	493	540	169	64	324	476
Netherlands	196	162	65	24	131	138
Norway	73	133	46	26	27	107
Sweden	-18	364	-90	81	72	283
Australia	413	393	244	84	169	309
New Zealand	82	49	25	3	57	47
Total	17327	6675	6164	944	11163	5731
Europe	2463	2440	-85	120	2548	2320

Source: OECD, *Employment Outlook*, September 1983, p. 45.

Table 9. Trend in average annual hours worked per person in employment
1975 = 100

	1976	1977	1978	1979	1980	1981	1982	1983
Canada	99.5	97.7	98.3	97.7	97.1	96.1	94.7	94.1
Finland	99.5	99.2	99.3	98.2	97.0	96.7	95.7	94.7
France	100.2	98.0	97.9	98.2	98.5	97.1	92.7	91.5
Germany	102.0	100.4	99.0	98.1	97.4	96.6	96.8	96.9
Japan	101.3	101.4	101.7	102.3	102.0	101.6	101.4	101.5
Italy	99.9	98.0	97.5	97.2	97.2	96.9	96.5	95.8
Netherlands	100.5	99.2	96.8	94.4	94.6	95.1	95.6	96.0
Norway	97.8	95.6	94.4	93.4	93.3	92.1	92.1	91.6
Sweden	100.6	98.9	96.4	95.7	94.9	94.4	95.3	95.8
United Kingdom	99.1	98.1	97.0	96.5	94.1	91.1	91.9	91.2
United States	100.1	100.0	99.7	99.6	98.7	98.4	97.9	98.9

Source: OECD, *Employment Outlook*, September 1985, p. 127.

For European countries and Japan the corresponding figures were 50 per cent and 27½ per cent, respectively (Table 8). As a result, the average number of annual hours worked per person in employment declined more rapidly in Europe than in the United States (Table 9), except in Italy where recorded part-time work decreased. In Germany, the United Kingdom, Belgium and Sweden full-time employment actually declined between 1973 and 1981. In other European countries (France, Denmark, Ireland and Norway) the increase in the number of part-time jobs exceeded that for full-time work. This contrasts with the United States, Japan and Canada, all countries with a high measured degree of real wage flexibility, where the absolute rise in full-time jobs far outstripped that for part-time employment. Despite the increased reliance upon part-time work, the rate of unemployment in Europe has nonetheless shown a stronger rise relative to capacity use than in the United States, indicating that greater flexibility of working-time arrangements in Europe compensated only in part for greater labour cost rigidity.

Women generally accounted for most of the rise in part-time employment, with Europe recording a ratio of increased female to increased total part-time employment as high as 95 per cent compared with 80 per cent for the United States and 83 per cent for Japan. As noted above, the more than proportionate increases in female employment largely mirrored the relative growth in service industries – a phenomenon accentuated by the cyclically-depressed conditions for manufacturing. Moreover, despite a continuous improvement of the relative earnings position,

Table 10. **Income floor, earnings exempt from employers' social security payments, 1982**
As a percentage of average aggregate wages and salaries

United States	zero	United Kingdom Pension and sickness insurance	27.2
Japan		Italy	
Pension insurance	17.2	Pension, sickness, unemployment insurance and family allowance	28.0
Sickness insurance	11.2		
Germany		Canada	
Pension insurance	15.8	Pension insurance	9.0
		Unemployment insurance	4.9
France	zero		

Source: U.S. Department of Health and Human Services, *Social Security Programs Throughout the World – 1983*; OECD, *National Accounts*.

hourly wages for women are still significantly below those for men. Also, part of privately-incurred non-wage labour costs need only to be met for full-time employees (e.g. company pension schemes, qualification periods for subsidised loans, etc.). Furthermore, social security contributions are sometimes subject to thresholds (minimum earnings) stimulating employers' demand for part-time work (Table 10). Finally, lay-off restrictions for part-time work are generally less stringent than for full-time work, providing another stimulus to hire part-time workers.

The dynamic behaviour of part-time employment coinciding with increased sub-contracting and home-working may be seen as a sign of enhanced flexibility of working time and work schedules. Moreover, for some countries there is also anecdotal evidence of increased flexibility for *internal* labour markets operating through better work organisation and greater occupational (intra-firm) mobility. The greater flexibility of the work force within companies is almost certainly associated with reduced quits and declining job opportunities elsewhere. Finally, employment growth in the "hidden" economy may have strengthened. To some extent, these developments have been the natural corollary of rigid aggregate labour costs, inflexible wage differentials, institutional impediments to lay-offs for full-time employees, and high effective marginal income tax rates.

E. Major results

The main factors bearing on labour market flexibility as well as the principal findings concerning indicators of flexibility are listed in Table 11 and may be summarized as follows:

- i)* Empirical analysis points to relatively greater short-run real wage rigidity in Europe than in the United States and Japan during the 1970s. This is possibly one reason why increases in unemployment relative to capacity after OPEC 1 have been strong in Europe and comparatively modest in the United States and Japan. A crucial element here has been the immediate response of money wages to the external price shocks which was typically weak in the United States and strong in Europe;
- ii)* After OPEC 2, a combination of rising real capital costs and falling capital productivity contributed to a squeeze on pure profits, and a labour market shake-out in Europe, notwithstanding real wage moderation and decreases in real wage rigidity. A reduction in medium-term output expectations played a part in these developments;
- iii)* For the United States, the empirical evidence suggests that the wage-restraining influence of the unemployment rate may have grown

Table 11. Indicators of labour market flexibility (1970s and early 1980s)
Synoptic table

	United States	Japan	Germany	France	United Kingdom	Italy	Canada	Austria	Netherlands	Sweden
1. Short-run real wage rigidity ^a	low	low	low	high	high	intermediate	intermediate	intermediate	high	
2. Intersectoral labour cost differentials*	average	average	low	high	low	high	low			low
3. Change in (2)	rising	stable	rising	falling	falling	falling	rising			falling
4. Inter-industry wage differentials ^c	high	high	low	low	low	average	high			low
5. Change in (4)	rising	rising	rising	falling	falling	falling	stable			falling
6. Change in dispersion of intersectoral productivity differentials ^d	falling	stable	rising	rising		falling				rising
7. Change in ratio of female to male wages		falling	rising	stable	rising	rising			rising	rising
8. Change in ratio of female to male unemployment rate	falling	rising	rising	falling	rising	falling	falling		rising	falling
9. Change in ratio of youth to adult wages	falling	stable		stable	rising		stable			rising
10. Change in ratio of youth to adult unemployment rates	falling	falling	rising	rising	rising		stable			rising
11. Unemployment replacement rates ^f	low	low	high	high	low	low	high	average		average
12. Change in part-time employment relative to full-time employment	small increase	small increase	strong rise	strong rise	small absolute	small fall	average rise		strong rise	strong rise
13. Change in annual hours worked per employed person	small fall	small rise	average fall	strong decline	strong decline	small decline	average fall		average fall	average fall
14. Earnings exempt from employers' social security contributions	zero	intermediate	intermediate	zero	high	high	low			
15. Rise in unemployment relative to high capacity use (shift in 'Okun curve')	small	small	moderate	strong	strong	strong	moderate		strong	small

a) Short-run price coefficients divided by cyclical coefficient (money wage equations for private non-farm business sector)

b) Coefficient of variation of sectoral labour cost differentials (compensation per employed person)

c) Coefficient of variation of inter-industry hourly wage differentials (pay for time worked)

d) Coefficient of variation of sectoral output per employed person

e) Hourly adult wages

f) Unemployment benefits per unemployed person as a percentage of net income of average production worker

stronger in the early 1980s. Moreover, the transmission of falling inflation to money wages appears to have quickened. Both developments point to increased real wage flexibility (cf. Gay, 1984);

- iv)* For Japan, the empirical evidence points to a high measure of real wage flexibility. Even so, a real wage gap persisted throughout the 1970s and early 1980s (Chart 4). This unusual combination is in part explicable in terms of a comfortable, though declining, level of profitability (cf. Henderson, 1984). In addition, it is arguable that the marginal product of labour has been rising faster than average productivity, making room for large wage increases (cf. Suzuki, 1985);
 - v)* Many OECD countries have experienced a rise in the non-accelerating inflation rate of unemployment (NAIRU), notably in Europe. This appears predominantly to have been a reflection of delayed labour market slack having grown much faster than capacity slack. There is evidence, however, that real wages in some major European countries have become less rigid after the second oil price shock;
 - vi)* There is evidence of an inverse, though weak, relationship across countries between degrees of real wage rigidity and the average size of inter-industry wage differentials. These differentials remained stable or fell in Europe (except in Germany), while they rose in the United States, Japan and Canada. In some European countries, rising inflation has played a role in the narrowing of wage- and labour-cost differentials;
 - vii)* In selected European countries there has been a trend decline in hirings which was stronger than the trend decline in separations (i.e. quits and lay-offs) – a symptom of reduced labour mobility. In contrast, in the United States a rising trend in lay-offs was outweighed by a rising trend in hirings (especially in the private service sector); hence, increased European unemployment in the 1970s was associated largely with reduced hirings (partly reflecting institutional barriers to lay-offs, high reservation wages and reduced medium-term output expectations). In contrast, the rise in U.S. unemployment during the 1970s primarily reflected increased lay-offs;
 - viii)* In Europe, part-time employment, mostly for women, has risen much more vigorously relative to total employment than in the United States or Japan. This can be viewed as a sign of enhanced flexibility of work schedules, mirroring structural shifts towards services, a reaction to rigid real wages for full-time employment, growing non-wage labour costs (part of which are not applicable to part-time employees) and the relatively low cost of female labour.
-

NOTES

1. For Germany, the deterioration of the relationship between unemployment and capacity use in the 1970s and early 1980s is nearly as strong as for Europe as a whole, i.e. there has been a strong upward shift of the Okun curve. In addition, there has been no outward shift of the Beveridge curve which measures the relationship between the number of vacancies and unemployment. In these conditions, the size of the upward shift of the "Okun curve" can be taken as a measure of real wage rigidity. In the case of Germany, this points to rigid rather than flexible real wages.
2. This relationship must be interpreted cautiously given that the measure of real wage rigidity is itself based on estimated wage equations, themselves a function of the unemployment rate.
3. These results are broadly consistent with recent findings by Artus (1984) referring to the manufacturing sector only.
4. These results need to be interpreted with caution. The estimated growth of warranted wage costs has been found to be sensitive to the assumed technological characteristics of the aggregate production function, notably the ex post malleability of capital. Thus, in conditions of putty-clay technology, the warranted real wage rate computed from a putty-putty production function will fail to remove structural unemployment. Moreover, aggregate production function parameters are notoriously difficult to determine econometrically.
5. An upward shift in the Okun curve implies a rise in the rate of unemployment consistent with stable output price inflation. In contrast, the rate of unemployment consistent with stable wage inflation would remain initially unchanged, but could subsequently rise as prolonged capital/ labour mismatch unemployment leads to a disinvestment of human capital.

BIBLIOGRAPHY

- Artus, J. (1984), "An Empirical Evaluation of the Disequilibrium Real Wage Hypothesis", International Monetary Fund Staff *Papers* (June).
- Blanchard, O., R. Dornbush, J. Drèze, H. Giersch, R. Layard, and M. Monti (1985), "Employment Growth in Europe: A Two-Handed Approach", Centre for European Policy Studies, CEPS Papers, No. 21 (June).
- Braun, S. (1984), "Productivity and the NAIRU (and Other Phillips Curve Issues)", Working Paper, No. 34, Board of Governors of the Federal Reserve System (February).
- Bruno, M. (1984), "Raw Materials, Profits, and the Productivity Slowdown", The Quarterly Journal of Economics (February).
- Bruno, M and Sachs, J. (1982), "Input Price Shocks and the Slowdown in Economic Growth: The Case of U.K. Manufacturing", National Bureau of Economic Research, Inc., Working Paper Series No. 851 (February).
- Coe, D. (1985). "Nominal wages, the NAIRU and Wage Flexibility", OECD Economic Studies, No. 5 (Autumn).
- Emerson, M. (1984), "The European Stagflation Disease in International Perspective and Some Possible Therapy", Centre for European Policy Studies".
- European Economic Community, 1984, "Improving Labour Market Flexibility", Summary of replies to EEC questionnaire, internal EEC document (1984).
- Gay, R. (1984), "Union Settlements and Aggregate Wage Behaviour in the 1980's" Federal Reserve Bulletin (December).
- Gordon, R. (1984), "Wage-Price Dynamics and the Natural Rate of Unemployment in Eight Large Industrialised Nations", OECD Workshop on Price Dynamics and Economic Policy (September).
- Grubb, D., Jackman, R., and Layard, R. (1983), "Wage Rigidity and Unemployment in OECD Countries", European Economic Review 21, p. 11-39.
- Hall, R. (1980). "Employment Fluctuations and Wage Rigidity", Brookings Papers on Economic Activity, No. 1.
- Hart, R.A. (1984), The Economics of Non-Wage Labour Costs, Boston, Sydney.
- Helliwell, J., Sturm, P., Jarrett, P., Salou, G. (1986), "The Supply Side in the OECD's Macroeconomic Model," OECD Economic Studies", No. 6 (Spring).
- Henderson, A. (1984), "Japanese and Australian Labour Markets: A Comparison of their Institutions, Structure and Performance", Australian Embassy, Tokyo, (unpublished draft) (November).
- Layard, R., Basevi, G., Blanchard, O., Buiter, W., and Dornbush, R. (1984), "Europe: the Case for Unsustainable Growth", Centre for European Policy Studies (May).

- Maddison, A. (1983). "Why Do Unemployment Rates Differ?" the Employment Research Centre, Shell Lecture, the University of Buckingham (October).
- Martin, J. (1983), "Effects of the Minimum Wage on the Youth Labour Market in North America and in France", *OECD Occasional Studies* (June).
- Mittelstadt, A. (1983), "Use of Demand Elasticities in Estimating Energy Demand", OECD Economics and Statistics Department Working Papers, No. 1 (March).
- Moy, F. and Sorrentino, C. (1981), "Unemployment, labourforce trends and lay-off practices in 10 countries", U.S. Department of Labor, *Monthly Labour Review* (December).
- Nissim, J. (1984), "An Examination of the Differential Patterns in the Cyclical Behaviour of the Employment, Hours and Wages of Labour of Different Skills: British Mechanical Engineering, 1963-1978", *Economica*, No. 204 (November).
- OECD, "The Challenge to Unemployment" (1982), a Report to Labour Ministers.
- OECD, *Economic Outlook* 33, July, 1983a.
- OECD, *Employment Outlook*, September, 1983b.
- OECD, *Economic Outlook* 35, July, 1984a.
- OECD, *Employment Outlook*, September, 1984b.
- OECD, *Economic Outlook* 36, December, 1984c.
- OECD, *Economic Outlook* 37, June, 1985a.
- OECD, *Employment Outlook*, September, 1985b.
- OECD, *Economic Outlook* 38, December, 1985c.
- Ragan, J.F. Jr. (1984), "Investigating the Decline in Manufacturing Quit Rates", *The Journal of Human Resources*, Vol. 19 No. 1.
- Sachs, J.D. (1983). "Real Wages and Unemployment in the OECD Countries", *Brookings Papers on Economic Activity* No. 1.
- Saunders, P. and Klau, F. (1985). "The Role of the Public Sector", *OECD Economic Studies* No. 4 (June).
- Schultze, C. (1984), "The Macroeconomic Costs of Microeconomic Efficiency", Brookings Discussion Paper in Economics (unpublished draft) (December).
- Suzuki, Y. (1985), "Japan's Monetary Policy Over the Past 10 Years", Bank of Japan, *Monetary and Economic Studies* (September).