INCOME DISTRIBUTION AND EMPLOYMENT: A COMPARATIVE STUDY OF MAJOR OECD COUNTRIES

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Working Paper n° 8307

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I would like to thank Mr. Yvan Lachapelle for his care in carrying out the computations for this paper.

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D/1983/3082/07

I. INTRODUCTION

During recent years unemployment has risen in virtually all OECD economies reflecting slower or negative growth in employment. Among the explanations usually advanced figure prominently the supply shocks of the seventies, which have imposed on OECD countries the need for major structural adjustments. These adjustments are however very slowly forthcoming, mainly due to wage and other rigidities, so that the decline of activity in many economic sectors has not been compensated by increased activities from new investments. Wage rigidities themselves, in the face of external terms of trade losses, have given rise to declining profit shares of the corporate sector and this decline in profits is often considered as a major reason for the observed reduction in gross capital formation and hence of employment. Furthermore, high real wage costs relative to profits encourage labour-saving investments so that a larger part of already reduced capital formation is used for replacing jobs by machines instead of creating additional employment.

While restrictive demand management may recently have exacerbated the unemployment problem in some countries this paper focusses on the evolution of distributive shares of factor payments. The evolution of factor shares is considered as particularly relevant for an understanding of the variance of employment growth or decline across countries. For example, since 1973 private sector employment in the United States has increased by over 12 million whereas it has declined by nearly 2 million in the EEC and this difference cannot be explained in terms of the oil shocks or of the worldwide reduction in demand growth.

The paper is organised as follows. Section II gives reasons for focussing on distributive shares and their significance in the growth process. Section III proposes a detailed decomposition of the contributing factors to the evolution of distributive shares. For the major OECD countries calculations of these contributing factors are presented in Section IV and interpreted in terms of the shocks which occurred and the policies pursued in the countries of the sample. In Section V regression analysis is applied to test the impact of changes in factor shares on employment growth. It is found that changes in income distribution have highly significant repercussions on employment growth. In Section VI the main conclusions are summarised and some policy implications are suggested.

II. THE RELEVANCE OF INCOME DISTRIBUTION FOR THE GROWTH PROCESS

For an assessment of international competitivity or the related issue of incentives to domestic investment, one would ideally like to dispose of an internationally linked general equilibrium model. The difficulties of constructing and maintaining a reliable and easily understandable model of this kind are, however, formidable. Existing international models usually suffer from excessive complexity and analytical intractability (the "black box" property) and sometimes even insufficient theoretical rigor. The latter becomes a serious problem when an economy is undergoing significant structural changes and when therefore the task of policy analysis is something more than extrapolation.

Short of a satisfactory international general equilibrium model applied economists in policy institutions both at the national and international level have regularly recourse to summary indicators which convey synthetically useful information. Prominent use is being made of unit labour costs (ULC) and of labour's distributive share (s), respectively defined as :

$$(1) \quad ULC \equiv wE/Y$$

and

$$(2) \quad s \equiv wE/pY$$

where w = wage costs (including payroll taxes), E = employment, Y = value-added, p = deflator of value-added.

ULC is a measure of the labour cost per unit of value-added or, macroeconomically, per unit of gross domestic product (GDP). If the cost of capital and the structure of production were not too divergent among countries, ULCs could be usefully compared internationally. Diverging trends of ULCs in any particular country relative to its competitors could then be interpreted as gains or losses in international competitivity.

Labour's distributive share has some advantages over ULCs for the purpose of this paper. First, while ULCs for any single country are meaningless numbers regaining interpretability only when related to ULCs of competitors, the distributive share is a number

in the closed interval (0,1) which can be more easily interpreted. Computation of the labour share is also useful because 1 - s represents the share of capital income, also called the profit share when Y is defined as net national product.

In policy-oriented reports [1/] it is usually emphasised that increases in labour's distributive share, improperly called the "wage-gap", tend to have unfavourable consequences for gross capital formation in general and for job-creating investments in particular. The effect on gross capital formation is attributed both to increased financial constraints on investment when the capital share declines, an effect which would be absent with perfect capital markets, and reduced incentives for capital formation. An additional consequence is the substitution effect due to an increase in the price of labour relative to capital.

Researchers have in general been rather unsuccessful in verifying empirically the importance of distributive shares for employment growth. One remarkable result was obtained by Morley (1979). He estimates unemployment in the United Kingdom as a function of the profit share and obtains a strong negative correlation between unemployment and lagged profit shares [2/]. Some further evidence was obtained by the OECD (1982), reproduced in Table 1.

From Table 1 it can be seen that wage costs, measured by real wages or by the wage gap, have a significant, albeit not exclusive, impact on employment growth, thus warranting close attention.

What does not emerge clearly from these considerations is whether there is an optimum level of distributive shares or, in what sense it would be desirable to have a constant or steadily increasing capital share.

1/ See, for example, the Annual Report of the Bank of International Settlements, the World Economic Outlook of the International Monetary Fund, and various publications of the OECD and the EEC.

2/ However, since he does not find any significant relationship between the level of employment and profit shares, most of the impact on unemployment may be due to effects on the labour supply.

Table 1

Summary of Employment Equations, Manufacturing

	1974-1979 change in employment, per cent	"due to"				
		Output growth	Wage costs	Raw material prices	Constant term	Residual
United States (1)	+4,8	+13,9	-8,7	-	-1,1	+0,8
Japan (2)	-6,5	+11,8	-12,1	+2,9	-6,6	-2,5
Germany (3)	-12,5	+11,2	-2,1	-	-21,6	0,0
France (1)	-6,5	+15,1	-2,0	+4,5	-21,6	-2,5
United Kingdom (1)	-8,7	+0,7	-1,6	+5,0	-12,0	-0,8
Italy (3)	+2,0	+8,8	+0,6	-	-5,8	-1,6
Canada (1)	+3,7	+11,3	-6,8	-	-2,1	+1,3
Belgium (1)	-18,0	+12,5	-4,0	+3,0	-28,2	-1,3
Denmark (1)	-10,9	+12,6	-23,9	-	-1,2	+1,6
Netherlands (2)	-14,0	+6,2	-6,0	+2,4	-17,4	+0,8
Netherlands (3)	-14,0	+6,6	-1,3	+0,8	-21,0	+0,9
Sweden (2)	-4,4	+0,3	-6,2	-	+2,2	-0,7

(1) Wage costs measured by real wages.
(2) Wage costs measured by "gap".
(3) Wage costs measured by relative wages.

Source : OECD (1982).

Some light can be shed on this question by the theory of income distribution under perfect competition. We use a constant-elasticity-substitution technology as proposed by Arrow et al. (1961) :

$$(3) \quad Y = \gamma \left[\delta K^{c} + (1-\delta) E^{c} \right]^{\frac{1}{c}}$$

where Y, K, E are value-added (GDP), capital and labour employment, resp.; γ, δ, and c are the efficiency, distribution and substitution parameters, resp., with $c = -(1-\sigma)/\sigma$, where $\sigma > 0$ is the elasticity of substitution. With $\sigma = 1$ the CES production function collapses to Cobb-Douglas technology.

Under perfect competition, labour's share of value-added can be obtained from (3) :

$$(4a) \quad s \equiv wE/pY$$

$$(4b) \quad = \gamma^{c} (1-\delta)(Y/E)^{-c}$$

and capital's share equals 1 - s.

The change in labour's share, equal to the opposite change in capital's share, resulting from an increase in employment is :

$$(5) \quad \frac{\delta s}{\delta E} = -\frac{(1-\sigma)}{\sigma} \frac{s(1-s)}{E} \leq 0 \quad \text{if } \sigma \leq 1$$

and the elasticity of labour's share with respect to variations in employment is then given by :

$$(6) \quad \varepsilon \equiv \frac{\delta s}{\delta E} \cdot \frac{E}{s} = \frac{-(1-s)(1-\sigma)}{\sigma} \leq 0 \text{ if } \sigma \leq 1$$

With $\sigma = 1$, or with constant productivity $\pi = Y/E$ distributive shares are seen to be constant from (4b). If productivity declines, as is the case with a declining capital-labour ratio, labour's share falls if and only if $\sigma < 1$.

From (3) we can also compute the real wage rate and distribution shares for full employment equilibrium. The full employment labour share is (4b) with Y and E replaced by their full employment values Y^{*} and E^{*}.

The equilibrium real wage rate is derived from (4a) and (4b) :

$$(7) \quad (w/p) = \gamma^{c} (1-\delta)(Y/E)^{\frac{1}{\sigma}}$$

For a given capital stock the real wage rate $(w/p)^*$ consistent with full employment E^* is

$$(8) \quad (w/p)^* = \gamma^c (1-\delta)(Y/E^*)^{\frac{1}{\sigma}}$$

The wage gap can then be defined as $w - w^*$. Whether wages above the full employment real wages are reflected in a higher labour share depends again on the elasticity of substitution. Al elasticity of substitution below unity implies that a 1 per cent increase in real wage costs relative to capital costs produces an increase in the capital-labour ratio by less than 1 per cent and hence an increase in productivity by less than 1 per cent. As a consequence labour's share increases with $\sigma < 1$, remains constant with $\sigma = 1$ and declines with $\sigma > 1$ as real wages rise above $(w/p)^*$.

It is therefore important to assess the empirical value of σ, but the empirical evidence is not conclusive. Some researchers obtain substitution elasticities around unity (Berndt and Wood, 1975). Others, such as Artus and Peyroux (1981) obtain $\sigma = 0.2$ for the United Kingdom, and $\sigma = 0.5$ for Germany and Japan. We tend to give more weight to the latter results since σ close to unity would imply that the elasticity of labour demand is around -4.0 for a labour share of 0.75 and such an elasticity is clearly unrealistic.

In an empirical study, Kendrick and Sato (1963) found that in the United States labour's share had been rising over the period from 1919 to 1960 and as we shall show this rise has continued during 1960-80. Nordhaus (1974) has provided evidence using US data from 1948-73 that a falling cost of capital (or a rising relative cost of labour) combined with a low elasticity of substitution has caused capital's share to decline and labour's share to increase.

So far technological progress has not been incorporated into the model. We first focus on the steady state where value-added must grow at a constant rate and where Y/K is a constant. Denoting the rate of growth common to Y and K by g, the rate of growth of the labour-force by n, the rate of capital productivity by m, and the rate of labour productivity growth by l, one obtains the following relationship among growth rates :

$$(9) \quad g = (1-s)(g+m) + s(n+l)$$

$$= n + l + \frac{(1-s)}{s} m$$

Because g, n, l, and m are constants, distributive shares are also constant in steady state. But this is only possible if either $\sigma = 1$ or if the ratio of capital to labour, measured in efficiency units, is constant, that is, if $g + m = n + l$.

Substitution of $g + m = n + l$ into (9) gives :

$$(10)\quad g = g + m + \frac{(1-s)}{s} m = g + \frac{m}{s}$$

which can only hold if $m = 0$ [3/]. Thus, only labour-augmenting technological progress assures convergence towards the steady-state solution in which distributive shares are constant.

For the adjustment path, which only converges if eventually $m = 0$, the following formula for the variation in labour's share can be derived [4/] :

$$(11)\quad \sigma \hat{s} = \beta (1-s)(1-\sigma)/\sigma$$

where $\beta = \hat{K} + m - n - l$

For $\sigma = 1$ the usual result $\hat{s} = 0$ is obtained. For $\sigma < 1$ we obtain $\hat{s} > 0$ if and only if $\beta > 0$. That is, with $\sigma < 1$, if either the capital-labour ratio is rising with Hicks-neutral technological progress, or if labour-augmenting technological progress exceeds capital-augmenting technological progress with a constant capital-labour ratio, or a combination of both, labour's share rises [5/].

If the elasticity of substitution is low then an increase in real wages relative to capital costs will not be offset by a sufficient increase in the capital-labour ratio. Hence the real wage increase will not be matched by productivity increases. This argument is reinforced by the considerations introduced by Magat (1979). In this paper we use therefore (4a) which yields by logarithmic differentiation :

$$(12)\quad \hat{s} = \hat{w} - \hat{p} - \hat{\pi}$$

3/ If $\sigma = 1$ factors can always be defined such that $m = 0$.

4/ See Dixit (1976), p. 75.

5/ Magat (1979) has derived some results for endogenous technological progress. Even with constant relative factor prices labour's equilibrium share increases if labour-saving innovation possibilities are more rapidly depletable than capital-saving innovation possibilities.

If $\hat{\pi}$ is replaced by full-employment productivity growth $\hat{\pi}_p$ and if $\S$ is different from 0, $\S$ can be called the "wage gap", that is the excess of wage growth above the warranted rate given by full-employment productivity growth.

Equations (4a) or (4b) can be interpreted as implicit demand functions for labour with the slope given by (5). The demand for labour rises therefore with the profit share and declines with a rising labour share under the assumption $\sigma < 1$. From relation (4a) and taking a downward sloping demand curve with respect to labour's share for granted, the following interpretation in terms of the traditional variables, real wages and productivity, can be given.

Changes in real wage costs lead to movements along the demand curve for labour while changes in productivity deplace the demand curve horizontally. Hence, real wage increases matched by productivity increases leave labour demand unchanged while increases in the labour share lead to reduced labour demand. If, in addition, firms are faced by finance constraints, then an increase in the labour share implies reduced funds for investment and hence a decline in investment and productivity growth which, with unchanged real wage growth, causes further declines in labour demand.

Finally, if unemployment is considered as a disequilibrium phenomenon then employment is either constrained by labour demand or by the aggregate demand curve. In Section V we regress employment on the labour share and on gross domestic product (GDP) as a measure of output as in (4b), or alternatively as a measure of the demand constraint.

III. CONTRIBUTING FACTORS TO THE EVOLUTION OF LABOUR SHARES : DEFINITIONS

The definition of labour share as in (2) and (12) is based on real wage costs and labour productivity. However, wage costs depend on several factors which are at least in the short run and under certain institutional arrangements exogenous : payroll taxes represent an important part of wage costs; either nominal or even real wages may be set by unions through implicit or explicit indexation schemes [6/]; if unions aim at real wages, then the consumer price index enters into definition (2) and hence into (12) and the consumer price, in turn, is influenced by import prices and the structure of domestic consumption. The deflator for domestic value-added which is relevant for producers is the deflator at factor costs which, in turn, depends on world market prices for exports and on the structure of domestic production. Hence, it is useful to expand (12) to shed light on the contributing factors to the growth of real wage costs.

The OECD, for example, has expanded definition (12) as follows :

$$(13)\quad \hat{s} = (\hat{W}_T - \hat{P}_c) + (\hat{P}_c - \hat{P}_M) + (\hat{P}_M - \hat{P}_F) - \hat{\pi}$$

where P_c = consumer price index and P_M = GDP deflator at market prices [7/].

In definition (13), the first term on the RHS measures the growth of real wage incomes, the second term is dominated by terms of trade changes, and the third component reflects indirect taxes and subsidies.

Definition (13) is somewhat unsatisfactory because the first term on the RHS is neither measuring real wage costs nor real wage payments as they enter indexation schemes or wage negotiations. Similarly, it is also not clear what is measured by the second term in addition to terms of trade effects. The following expansion of definition (12) remedies these two short-comings.

$$(14)\quad \hat{s} = (\hat{W}_T - \hat{W}_c) + (\hat{P}_M - \hat{P}_F) + (\hat{P}_c - \hat{P}_m) + (\hat{P}_x - \hat{P}_M) + (\hat{W}_c - \hat{P}_c) + (\hat{P}_m - \hat{P}_x) - \hat{\pi}$$

6/ Sachs (1979).

7/ Computations based on a similar formula for EC countries, the United States and Japan are contained in "Real Wages and Employment", Note for the attention of the Economic Policy Committee, Commission of the European Communities, II/214/82-E, rev. 1, 1982.

where P_m = import price index, P_x = export price index, and W_c = index of wage payments per dependently employed.

The interpretation of definition (14) is straightforward. The first term on the RHS measures variations in payroll taxes; the second term variations in indirect taxes and subsidies. Thus, both terms reflect taxation effects on the labour share.

The third and fourth terms reflect structural effects: $(\hat{P}_c - \hat{P}_m) < 0$ implies that inflationary pressure is imported while $(\hat{P}_c - \hat{P}_m) > 0$ indicates that internal factors aggravate imported inflation reflecting therefore the structure of domestic demand and the effects of macroeconomic demand management. The fourth term $(\hat{P}_x - \hat{P}_M)$ is positive if the country's resource allocation gives rise to a favourable international specialisation so that export prices rise more rapidly than average producer prices in the economy. This variable is therefore influenced by the structure of production of the economy.

The fifth term $(\hat{W}_c - \hat{P}_c)$ measures the growth of real wage payments and thus the wage-push contribution to the growth of the labour share. The sixth term $(\hat{P}_m - \hat{P}_x)$ measures changes in the terms of trade and the last term $(\hat{\pi})$ measures changes in productivity.

Expansion (14) only takes into account payroll taxes and indirect taxes and subsidies. The complement $1 - s$ represents the gross share of capital. Direct taxes on capital income can also be incorporated by redefining s. What is relevant for economic decisions is not the gross share but the share net of taxes. Denoting the amount of taxes (for precise definition see the statistical appendix) paid by the corporate sector by TC, the net capital share can be defined as :

$$(15) \quad 1 - s' = 1 - W_T E(1 + TC/E)/(P_F Y)$$
$$= 1 - W_T EZ(P_F Y) \text{ where } Z = 1 + TC/(W_T E)$$

Moreover, rational wage bargaining should be based on net wages and not on gross wages. Denoting income taxes paid by labour by T, net wage incomes per worker are equal to $W_c t/P_c$ where $t = 1 - T/W_c E$. Incorporation of both tax effects leads to the following expansion of a redefined labour

share s' due to the addition of business taxes :

$$(16)\quad \hat{s}' = (\hat{W}_T - \hat{W}_C) + (\hat{P}_M - \hat{P}_F) + \hat{\Sigma} + (\hat{P}_C - \hat{P}_m) + (\hat{P}_C - \hat{P}_M) + (\hat{W}_C + \hat{t} - \hat{P}_C) - \hat{t} + (\hat{P}_m - \hat{P}_x) - \hat{\pi}$$

For the empirical computations of expansions (14) and (16) several decisions had to be made.

First, for most computations the chosen level of aggregation is the economy. One reason for this choice is data availability, another the fact that we are concerned with aggregate employment. The latter is influenced by the relative price structure, in particular the terms of trade which are part of equations (14) and (16). However, as shown in the Note for the Economic Policy Committee (1982) variations of the labour share in manufacturing industries are much more pronounced than for the economy as a whole. It can therefore be expected that our aggregate results hold a fortiori for manufacturing.

Second, the choice of time periods. Our time series extend from 1960-1980 and for industry from 1970-1980. We also consider two subperiods from 1960-1970 and 1971-1980. This choice is to some extent arbitrary. Many researchers prefer to split their samples on 1972-73, year of the first oil shock. It is however plausible four our purpose to split the sample in 1970-71 since high wage pressure characterised the last years preceding the first oil shock.

Any measure of the change in the labour share neglects, of course, the initial starting point. The rise in the labour share can be expected to have a lesser impact on employment in countries where before 1960 the labour share was low compared to others. This holds particularly for Japan whose labour share was the lowest among the countries in the sample prior to 1960, although the significance of a comparison of absolute labour shares is even more problematic than a comparison of growth rates.

Third, total employment comprises employed labour, family aids, and the selfemployed. Over a 20 years period the number of selfemployed has diminished, in some countries drastically (e.g. Italy). The same is true of family aids although their total number is still very important in countries such as Italy and above all Japan. We have left family aids in the total employment data, partly because the statistical series on family aids are unreliable and partly because their shadow wage is difficult to assess.

Labour shares are therefore seriously upward biased. To assess this potential bias, labour shares are recomputed for Italy and Japan excluding family aids.

Labour productivity was computed by dividing GDP by the total of employed and selfemployed. As can be seen from equation (12) this is equivalent to imputing to the selfemployed a wage rate for their labour input equal to the average of employed workers. For example, if selfemployed in agriculture earn less than the average of employed workers, this difference would implicitly be imputed to negative profits. This procedure seems to be more consistent than using only employed workers in definition (12) with the result of declining productivity when structural shifts from selfemployment to dependent employment occur. As such shifts were very pronounced over the last 20 years a substantial bias would be introduced.

Fourth, net labour productivity is economically more meaningful than gross productivity. However, capital depreciation data is notoriously arbitrary and hence the labour share of net domestic product is less reliable. In Table 2 shares for both gross and net domestic product are shown. Their levels differ significantly but not so their evolution. In the remainder of the paper only the gross shares are therefore retained.

Fifth, an expansion such as in (14) or (16) is a local approximation whose precision depends on the magnitudes of change. The approximation error can be illustrated with a two-period computation of the change in productivity. Indexing the first period with 0 and the second with 1, one obtains from Y/L :

$$(17)\quad \frac{\pi_1 - \pi_0}{\pi_0} = \frac{Y_1/L_1 - Y_0/L_0}{Y_0/L_0} = \frac{L_0}{L_1}(\hat{Y} - \hat{L})$$

The continuous approximation yields $\hat{\pi} = \hat{Y} - \hat{L}$ and the error of approximating $(\pi_1 - \pi_0)/\pi_0$ by $\hat{\pi}$ is equal to L_0/L_1. For small changes in L, L_0/L_1 is close to 1 and the error is negligeable. We indicate therefore changes in s based on computations with (17) and on computations with approximations (14) and (16).

Finally, changes in the components of the labour share as defined in (14) are in one respect unsatisfactory. These changes arise from a pure decomposition of the definition of labour shares. In this sense, the computation cannot be wrong. But, if one wishes to use changes of the labour

share as an explanatory variable for, say, changes in employment, then a problem arises. For example, if firms are able to match increases in real wage costs by increasing productivity through labour substitutions the impact on the wage gap is the same as with low real wage growth matched by low productivity growth. However, the effect on employment is more favourable in the latter case than in the former. This defect of the labour share measure could be remedied by replacing actual productivity growth with full employment productivity growth. Unfortunately, due to substantial structural changes in industrial countries, no reliable estimates for full employment productivity growth are available for the 1970s. We have therefore not introduced any corrections for productivity growth into the labour share computations but adjustments will be made in the regression analysis of Section V.

Table 2

Evolution of Labour Shares : 1960 - 82

A. Labour Productivity Measured by Gross Domestic Product per Employed (Dependent and Self-Employment)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982 (3)
France	0.73	0.73	0.74	0.74	0.74	0.73	0.72	0.71	0.72	0.72	0.71	0.71	0.70	0.70	0.72	0.74	0.74	0.75	0.75	0.74	0.76	0.77	0.75
Germany	0.71	0.72	0.72	0.73	0.71	0.72	0.72	0.72	0.70	0.71	0.72	0.73	0.73	0.74	0.75	0.75	0.74	0.73	0.72	0.72	0.73	0.73	0.72
Italy (1)	0.82	0.80	0.79	0.82	0.83	0.82	0.80	0.80	0.79	0.77	0.78	0.81	0.80	0.81	0.81	0.85	0.84	0.85	0.85	0.82	0.82	0.85	0.86
(2)	0.69	0.68	0.69	0.72	0.74	0.73	0.72	0.72	0.71	0.70	0.72	0.75	0.74	0.75	0.76	0.80	0.79	0.80	0.80	0.78	0.77	n.a.	
Un.Kingdom	0.72	0.73	0.74	0.73	0.73	0.73	0.74	0.73	0.73	0.74	0.76	0.73	0.74	0.74	0.76	0.78	0.75	0.73	0.72	0.74	0.76	0.76	0.75
Belgium	0.69	0.68	0.70	0.70	0.70	0.70	0.72	0.72	0.71	0.71	0.69	0.71	0.71	0.72	0.73	0.76	0.77	0.78	0.78	0.78	0.79	0.81	0.79
Netherlands	0.67	0.70	0.71	0.72	0.73	0.74	0.76	0.76	0.75	0.76	0.77	0.78	0.77	0.77	0.78	0.80	0.77	0.74	0.74	0.74	0.74	0.72	0.72
U.S.A.	0.73	0.72	0.71	0.71	0.71	0.70	0.70	0.71	0.72	0.73	0.74	0.73	0.73	0.73	0.74	0.73	0.73	0.72	0.72	0.72	0.73	0.73	0.74
Japan (1)	0.87	0.80	0.84	0.83	0.79	0.81	0.77	0.75	0.73	0.71	0.71	0.75	0.75	0.76	0.80	0.84	0.84	0.85	0.84	0.84	0.84	0.85	0.87
(2)	0.59	0.55	0.58	0.59	0.57	0.58	0.56	0.55	0.55	0.54	0.55	0.59	0.59	0.61	0.64	0.68	0.68	0.68	0.67	0.67	0.68	n.a.	

B. Labour Productivity Measured by Net Domestic Product per Employed (Dependent and Self-Employment)

France	0.82	0.83	0.83	0.84	0.83	0.83	0.82	0.81	0.81	0.81	0.80	0.80	0.79	0.79	0.82	0.85	0.86	0.85	0.85	0.85	0.87	0.89	0.87
Germany	0.78	0.80	0.80	0.81	0.80	0.80	0.81	0.81	0.79	0.79	0.81	0.83	0.82	0.83	0.85	0.86	0.84	0.84	0.83	0.82	0.84	0.85	0.84
Italy	0.90	0.88	0.87	0.90	0.91	0.90	0.88	0.88	0.86	0.84	0.86	0.89	0.88	0.89	0.90	0.96	0.94	0.96	0.95	0.92	0.91	0.95	0.97
Un.Kingdom	0.80	0.80	0.81	0.80	0.80	0.81	0.82	0.81	0.81	0.82	0.85	0.82	0.83	0.83	0.86	0.89	0.86	0.84	0.83	0.85	0.88	0.89	0.88
Belgium	0.78	0.77	0.78	0.79	0.78	0.79	0.81	0.81	0.80	0.79	0.77	0.79	0.80	0.80	0.82	0.85	0.86	0.87	0.87	0.87	0.88	0.90	0.88
Netherlands	0.71	0.73	0.74	0.76	0.76	0.77	0.79	0.79	0.78	0.78	0.80	0.81	0.81	0.80	0.82	0.84	0.81	0.82	0.82	0.83	0.83	0.81	0.81
U.S.A.	0.82	0.82	0.80	0.80	0.80	0.78	0.78	0.79	0.80	0.82	0.84	0.83	0.83	0.82	0.85	0.84	0.84	0.83	0.83	0.84	0.86	0.85	0.86
Japan	1.00	0.92	0.97	0.97	0.92	0.95	0.91	0.88	0.85	0.83	0.83	0.88	0.88	0.90	0.93	0.97	0.97	0.98	0.97	0.97	0.97	1.00	1.01

Notes : (1) Including unpaid family aids.
(2) Excluding unpaid family aids.
(3) Figures for 1982 are estimates.
n.a. = data not available.

IV. CONTRIBUTING FACTORS TO THE EVOLUTION OF LABOUR SHARES : COMPUTATIONS

Computations were made for Belgium, France, Germany, Italy, the Netherlands, the United Kingdom, the United States, and Japan. Definitions of variables and their statistical sources are given in the Statistical Appendix. Table 3 summarizes these results with averages and variances for the period 1960-1980 and the subperiods 1960-71 and 1971-80.

In no country did labour shares decline over the period 1960-80. In Italy and the United States they remained constant while the highest increases occurred in Belgium and the Netherlands [8/]. The high variances for Italy and the United Kingdom suggest that on a year-by-year basis rises and declines alternated significantly. Looking at the subperiods, labour shares declined in France and Italy during 1960-71 and in the Netherlands and the United States during 1971-80.

We now turn to the contributing factors.

For all countries the most important elements are real wage growth, terms of trade changes, and productivity growth. Across the board tax and structural effects are less important although in some countries they are non-negligeable.

Tax effects

Payroll taxes contributed to a rise in labour shares in all countries with the exception of Italy. The strongest rises accurred in Germany during 1960-71 and in Belgium during 1971-80. In Italy the decline in payroll taxes was particularly pronounced during 1971-80.

Indirect taxes and subsidies changed only marginally during the whole period. With the exception of the United Kingdom where they rose marginally, they declined slightly in most other countries, and remained constant for the Netherlands and the United States for 1960-80.

Structural effects

The structural effects are measured by $(\hat{P}_c - \hat{P}_m)$ and $(\hat{P}_x - \hat{P}_M)$. If domestic consumer prices increase more rapidly than import prices the structure of domestic demand, otherwise said home-made inflation, tends to raise the

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8/ However, as can be seen from Table 2, when unpaid family aids are excluded the labour share rose strongly in Italy.

labour share. On the other hand, if export prices increase more rapidly than the deflator of GDP at market prices this favourable structure of production feeds positively into the labour share.

Consumer prices grew more rapidly than import prices in all countries during 1960-70 while export prices grew less rapidly than GDP deflator at market prices. The net structural effect on labour shares was negative in most countries and marginally positive in the others. The largest negative effect of the combined structural effect occurred in France with an annual average of -1.6 per cent.

During 1971-80 the picture changed completely. Import prices increased more rapidly than consumer prices in all countries, suggesting that some inflation was imported. The effect of production structure remained negative with the exception of Italy and above all the United States. The total structural effect was most pronounced in Japan with an annual average of -7 per cent, followed by France with -4.8 per cent, Italy with -4.2 per cent, and the United States with -3.7 per cent. The variances of the structural effects are by far the largest among the contributing factors indicating that the year-by-year changes have been significant.

Real wage payments

For both periods and for all countries real wages increased with the unique exception of the United States during 1971-80. The largest increases during 1961-70 occurred in France and Italy, the smallest in the United States. During 1971-80 the growth of real wages decelerated except for France and Belgium, and in the United States it became even negative.

Terms of trade

The terms of trade change being defined as $\hat{P}_m - \hat{P}_x$ represents a loss when the change is positive. During 1961-70 all countries benefited from small terms of trade gains, the largest gains accruing to Germany.

In the following decade a complete reversal occurred : all countries suffered from terms of trade losses; most so Japan (8.8 per cent annual average) followed by the United States (4.6 per cent). The smallest losses occurred in the United Kingdom (0.7 per cent), followed by Belgium, the Netherlands, and Germany. The oil price like and exchange rate movements were the major factors

behind the terms of trade changes. In particular, after 1973 the negative impact of higher oil prices on European countries' terms of trade was cushioned by the appreciation of European currencies in terms of the dollar. The US terms of trade were, of course, victim of higher oil prices and of a simultaneously depreciating dollar.

Productivity growth

Over the entire period productivity growth was highest in Italy, France and Germany and lowest in the United States [9/]. Nevertheless, only in the United States has productivity outgrown real wage incomes. Real wage income growth exceeded productivity growth corrected for terms of trade losses most significantly in France (by 3.6 percentage points annually) and in Italy (by 2.8 percentage points annually).

Problems arose and accumulated during the period 1971-81. To take the example of France, during 1960-71 real wages increased by 6.4 per cent annual average, offset largely by a terms-of-trade corrected annual productivity growth of 5 per cent. Over the next decade real wages continued to grow at 6.8 per cent while productivity growth slowed down to 3.1 per cent and terms-of-trade losses represented 2 per cent so that the excess of wage growth amounts to 5.7 per cent.

During the 1970s productivity growth in Japan remained higher than in Europe but the margin was narrow and insufficient to compensate for the drastic deterioration of the terms of trade.

9/ The productivity data for Italy are, however, biased upwards due to unpaid family aids being left in the employment data.

Table 3

Contributing factors to the evolution of labour shares [1/]

	$\hat{s}(1)$	$\hat{s}(2)$	$(\hat{W}_T-\hat{W}_c)$	$(\hat{P}_M-\hat{P}_F)$	$(\hat{P}_c-\hat{P}_m)$	$(\hat{P}_x-\hat{P}_M)$	$(\hat{W}_c-\hat{P}_c)$	$(\hat{P}_m-\hat{P}_x)$	$\widehat{77}$
A. 1960-80									
France	0,2	0,5	0,5	-0,2	-1,8	-1,6	6,6	1,0	4,0
	(1,3)	(1,4)	(0,8)	(0,5)	(9,0)	(4,1)	(2,3)	(5,1)	(1,4)
Germany	0,2	0,3	0,4	-0,1	0,4	-1,1	4,2	0,2	3,7
	(1,4)	(1,5)	(1,1)	(0,8)	(5,5)	(2,9)	(2,6)	3,6)	(1,8)
Italy	0,0	0,3	-0,1	-0,2	-0,8	-1,5	5,7	1,5	4,4
	(2,1)	(2,2)	(1,6)	(0,9)	(10,3)	(5,4)	(3,0)	(5,5)	(2,8)
U.K.	0,2	0,4	0,3	0,2	0,3	-0,7	2,4	0,2	2,3
	(2,0)	(2,2)	(0,9)	(1,1)	(8,5)	(4,4)	(2,7)	(5,3)	(2,0)
Belgium	0,7	0,9	0,3	-0,1	0,2	-0,6	4,4	0,4	3,6
	(1,5)	(1,7)	(0,5)	(0,6)	(5,0)	(4,3)	(1,9)	(1,6)	(1,9)
Netherlands	0,6	0,8	0,8	0,0	1,4	-2,3	4,2	0,4	3,6
	(1,8)	(1,9)	(1,5)	(0,5)	(7,2)	(5,9)	(2,2)	(2,1)	(2,3)
Un. States	0,0	0,1	0,4	0,0	-2,3	0,6	0,8	2,0	1,4
	(1,1)	(1,1)	(0,4)	(0,5)	(9,2)	(5,0)	(2,4)	(5,6)	(1,7)
B. 1960-71									
France	-0,2	0,0	0,5	-0,2	0,5	-2,1	6,4	-0,1	4,9
	(1,0)	(1,1)	(0,7)	(0,5)	(2,9)	(2,2)	(2,6)	(1,6)	(0,7)
Germany	0,3	0,6	0,3	-0,2	2,3	-2,1	5,7	-1,2	4,3
	(1,4)	(1,6)	(1,4)	(1,0)	(2,0)	(1,5)	(2,4)	(1,8)	(1,5)
Italy	-0,1	0,2	-0,0	-0,2	2,5	-3,2	6,8	-0,1	5,7
	(2,1)	(2,4)	(1,5)	(0,4)	(2,0)	(1,8)	(2,6)	(1,3)	(2,0)
U.K.	0,1	0,3	0,2	0,3	1,5	-1,3	2,7	-0,3	2,8
	(1,6)	(1,7)	(0,2)	(0,8)	(3,3)	(2,5)	(1,6)	(1,4)	(1,6)
Belgium	0,2	0,4	-0,5	0,1	0,9	-1,4	4,4	0	4,2
	(1,7)	(1,8)	(0,5)	(0,6)	(1,8)	(1,5)	(1,4)	(1,2)	(1,3)
Netherlands	1,3	1,7	0,5	0,1	3,4	-4,3	5,9	-0,1	3,9
	(1,3)	(1,3)	(1,2)	(0,5)	(2,2)	(1,6)	(2,2)	1,2)	(2,0)
Un. States	0,1	0,1	0,2	0,0	-1,2	-1,1	2,1	-0,4	1,1
	(1,3)	(1,3)	(0,4)	(0,2)	(1,9)	(1,3)	(0,8)	(1,7)	(1,4)
C. 1971-80									
France	0,7	1,0	0,4	-0,1	-3,9	-0,9	6,8	2,0	3,1
	(1,4)	(1,5)	(0,9)	(0,5)	(12,3)	(5,5)	(1,8)	(7,1)	(1,5)
Germany	0,1	0,3	0,6	-0,1	-1,4	-0,2	2,8	1,5	3,0
	(1,3)	(1,5)	(0,4)	(0,6)	(7,3)	(3,7)	(1,7)	(4,4)	(1,9)
Italy	0,4	0,8	-0,2	-0,2	-4,4	0,2	4,8	3,3	2,7
	(2,3)	(2,3)	(1,4)	(1,3)	(13,9)	(7,2)	(3,2)	(7,5)	(2,8)
U.K.	0,0	0,2	0,4	0,0	-0,6	-0,4	2,1	0,7	2,0
	(2,6)	(2,9)	(1,2)	(1,4)	(11,8)	(5,9)	(3,6)	(7,6)	(2,3)
Belgium	1,4	1,8	0,1	-0,3	-0,5	-0,1	4,5	0,9	2,9
	(1,3)	(1,4)	(0,3)	(0,6)	(6,9)	(6,1)	(2,4)	(1,9)	(2,2)
Netherlands	-0,2	0,0	1,1	0,0	-0,7	-0,5	2,5	1,0	3,3
	(1,9)	(2,0)	(1,8)	(0,5)	(9,7)	(7,9)	(2,5)	(2,6)	(2,6)
Un. States	-0,2	-0,1	0,7	0,0	-6,0	2,3	-0,6	4,6	1,0
	(1,0)	(1,0)	(0,2)	(0,8)	(12,0)	(6,7)	(2,7)	(7,1)	(1,9)
Japan (2)	1,6	2,1	0,2	0,0	-4,3	-2,7	3,9	8,8	3,9
	(2,4)	(2,6)	(0,5)	(0,4)	(19,5)	(7,5)	(4,0)	(13,6)	(2,4)

Notes : (1) $\hat{s}(1)$ is the average annual change in the labour share computed from the LHS of equation (14). $\hat{s}(2)$ is computed from the RHS of equation (14). Numbers in parentheses are variances.

(2) For Japan data prior to 1970 is not reliable.

Date availability limited computations based on formula (16) to the European countries and to the period 1971-80.

Table 4 gives average values for $\hat{z}$, the growth rate of corporate taxes expressed as a percentage of total labour costs, and for $\hat{t}$, the growth rate of the share of non-taxed labour income. Only non-zero values for $\hat{z}$ affect the labour viz. the profit share.

Table 4
Additional tax and productivity factors, 1971-80

	$\hat{z}$	$\hat{t}$
France	0.0 (0.6)	-0.6 (0.8)
Germany	0.0 (0.4)	-0.6 (1.3)
Italy	0.1 (0.2)	-0.9 (0.9)
United Kingdom	-0.1 (0.9)	-0.1 (1.7)
Belgium	0.0 (0.3)	-1.0 (1.4)
Netherlands	0.1 (0.4)	-0.9 (1.0)

Table 4 suggests that changes in corporate taxes have not much affected income distribution on an after-tax basis. The averages for most countries are close to zero but the variances are very large so that important year-by-year changes have taken place. In all European countries direct taxation of labour income has increased so that after tax labour incomes as a share of gross labour incomes have declined. This effect is more pronounced in Belgium where on annual average the ratio of net to gross labour income has declined by 1 percentage point.

From the data presented in this section the following conclusions can be drawn. During the seventies real wage growth decelerated significantly everywhere. But, in EEC countries and Japan, even decelerated real

wage growth was still in excess of the warranted rate of growth of real wages, namely the one compatible with constant labour shares. One reason is the decline in productivity growth compared to the sixties. Even more important are the terms of trade losses which industrial countries experienced during the seventies, combined with increased payroll taxation. Thus, if one considers the terms of trade losses of the seventies as a largely exogenous phenomenon it would have required a more pronounced wage moderation and lighter social security contributions of employers than those which took place to slow down the increase in labour shares.

One may even be tempted to interpret the macroeconomic inter-dependencies as follows. Real wage growth in excess of rates compatible with the terms of trade losses has induced firms to reduce employment and use investment for labour substitution. Governments in general assisted in maintaining employment in industries in difficulties and absorbed a rising share of overall employment. Combined with a reduced rate of investment for capacity expansion the overall productivity declined. Faced with the need to finance rising transfer payments governments attempted to raise revenues by increasing payroll taxes, thereby closing the vicious circle.

The inverse correlation between changes in employment and in labour shares is suggestive : the labour share in Belgium rose most strongly and in the United States least while the contrary is true for employment. Only for the United Kingdom and Japan is the correlation not evident but this can be explained in terms of their starting positions. In 1960 and in spite of rapid growth still in 1980 Japan had the lowest labour share (when corrected for family aids), and by 1980 the lowest level of unemployment, while the United Kingdom had in 1960 a labour share among the highest and the highest level of unemployment in 1980.

Section V pursues these relationships in some detail.

V. THE IMPACT OF CHANGES IN LABOUR SHARES ON EMPLOYMENT

The purpose of this section is not to provide a full explanation of variations in employment. More modestly the objective is to find out whether variations in distributive shares have an effect on employment growth. While practical economists and businessmen take such a relationship for granted, empirical research support is not very solid, as evidenced by the results in the OECD (1982) study. In that study the wage gap never is statistically significant in regressions estimating total employment, and is significant in equations for employment in manufacturing only for Japan, Canada, Denmark, and the Netherlands.

Econometric results depend, of course, on the definition of employment and of distributive shares and on the chosen functional form. We have extensively experimented with alternative definitions and functional forms.

From equation (4b), the following testable relationship is obtained by taking logs and rearranging :

(18) $\ln E_t = a_0 + a_1 \ln s_t + a_2 \ln Y_t + n_t$

where $a_0 = -\frac{1}{c} \ln(1 - \quad) - \ln \quad > 0$

$a_1 = \frac{1}{c} \quad < 0, \; a_2 = 1.$

Alternatively, relation (4b) can be transformed to :

(19) $\hat{E}_t = b_0 + b_1 \hat{s}_t + b_2 \hat{Y}_t + \varepsilon_t$

where $b_1 = 1/c, \; b_2 = 1$

and $b_0 \neq 0$ if γ or δ are not time constants; n_t and ε_t are stochastic error terms with the usual properties assumed.

For the employment variable we have deducted from total employment public sector employment to approximate private sector employment. It is this latter variable that is expected to be sensitive to income distribution.

Regressions were run both with net and gross labour shares. The results are not significantly different so that only those obtained with gross shares are reported.

Finally, demand is approximated by GDP at constant prices.

Equations (18) and (19) are equilibrium relations and theory does not suggest definite dynamic constraints. In view of the limited degrees of freedom available with annual data, and the fact that our interest is solely to test whether employment and distributive shares are related in a statistically significant sense, we have experimented only with lags of the labour share variable up to three periods (years). For the income variable we have only included either current income or income one period lagged.

We also have tested leaded values of s and Y on the hypothesis that firms base their umployment decisions on expected values of demand and distributive share and that their expectations are correct. Leaded values were consistently insignificant allowing us to reject this hypothesis. But this test confirms our a priori notion of causality, namely that changes in distributive shares cause changes in employment and not the other way round.

The results are summarised in Table 5.

For the interpretation of the results the following considerations have to be kept in mind. Employment data are sometimes of questionable reliability, particularly in Japan and Italy where family aids represent important shares of the labour force. Furthermore, in some countries (e.g. the United States) variations in the labour share have been very small so that measurement errors can become important in relative terms. Finally, the true dynamic structure of the equations is at best very grossly approximated.

With these reservations in mind the results in Table 5 are nevertheless provoking. When employment, that is its log transformation or its growth rate, is regressed simply on labour shares the negative effect of higher labour shares on employment is in all countries statistically significant.

When a demand or income variable is added both this variable and the labour share are statistically significant with the right sign of the coefficients. Only for Japan does this equation perform poorly (but Japanese employment data for the 1960s have a very approximative character).

As argued in Section III, productivity growth is at least partly endogenous. We have therefore estimated the trend of productivity growth with equation :

(20) $\text{Log } \pi_t = b_0 + b_1 \log t + \varepsilon_t$

for the period 1960-1982.

The parameter b_1 is our estimate of the trend of productivity growth ($\hat{\bar{\pi}}$).

The estimates of productivity trend $\hat{\bar{\pi}}$ are used to replace $\hat{\pi}_t$ by $\hat{\bar{\pi}}$ in the definition of $\hat{s}$ to obtain $\hat{s}'$ and equation (19) was reestimated as

$$(21) \quad \hat{E}_t = c_0 + c_1 \hat{s}'_t + c_2 \hat{p}_t \quad c_3 \hat{\gamma}_t + \xi_t$$

where $\hat{p}_t = \hat{\bar{\pi}} - \hat{\pi}_t$

The deviation of productivity growth from trend is significant in the regressions for all countries except Japan. It is particularly important for Italy where without this variable neither the labour share nor income growth seems to be significant. Once trend deviations of productivity growth are introduced the labour share based on trend productivity growth, the income variable and the entire equation are highly significant. In view of the theoretical indeterminedness of the sign of this coefficient it is not surprising that the estimated coefficient c_2 of the trend deviations of productivity growth vary in sign. c_2 is positive for France and Italy where $\hat{p}_t$ is not lagged and negative for all other countries where $\hat{p}_t$ is lagged.

For each country, the estimated coeeficients of labour shares are very robust, independently of the functiona specification in logs or growth rates. Across countries they range from - 0.16 for France to - 0.60 for Germany. Since this coefficient is equal to $-\sigma(1-\sigma)$ the implied elasticity of factor substitution σ ranges from 0.14 to 0.38. These estimates are conform with the hypothesis $\sigma \leq 1$ of Section II and support other empirical research yielding low substitution elasticities.

The log-transformed equations yield somewhat less satisfactory results than the equations expressed in growth rates. In particular, the constant term is positive and highly significant as expected, but the coefficient of the income variable is close to zero in many cases. The reason for this shortcoming is the inadequate dynamic specification of the income variable. Since our focus is on the evolution of factor shares the dynamic structure of the income term was not pursued and we corrected the presence of autocorrelation with first- or second-order autoregressive processes.

When the equation is transformed to growth rates most of these problems disappear, and the coefficients of the labour share remain unchanged. The intercept now ranges from - 0.009 in the Netherlands to - 0.02 in Germany,

suggesting that in the absence of income growth employment declined between 1 and 2 per cent each year, a very sensible figure. The income coefficients, while still below 1, are now much higher and range from 0.31 to 0.96. Incomplete dynamic specification is therefore visible also here. Nevertheless, and particularly in view of the robustness of the coefficients of the factor shares in these equations it seems safe to conclude that growth of the labour share slows down employment growth.

Table 5

Estimation results : Employment Growth in the Private Sector, 1960 - 1982

					ρ_1	ρ_2	$\bar{R}^2$	pr(F)(1)	DW
France	0,003 (1,9)	-0,18 $\hat{S}_{t-1}$ (-1,8)					0,099	0,089	2,069
	9,76 (466)	-0,15 ln S_{t-1} (-1,6)			0,9 (23,7)		0,900	0,000	2,087
	9,55 (424)	-0,16 ln S_{t-1} (-3,1)	+ 0,08 lnY_{t-1} (10,7)		0,30 (1,3)		0,926	0,000	1,747
	-0,02 (-4,4)	-0,11 $\hat{S}'_t$ (-1,2)	+ 0,39 $\hat{P}_t$ (2,9)	+ 0,63 $\hat{Y}_t$ (6,3)	0,69 (5,1)		0,580	0,000	2,343
Germany	-0,005 (-1,2)	-0,62 $\hat{S}_{t-1}$ (-3,5)			0,36 (1,8)		0,426	0,001	1,893
	9,8 (262)	-0,69 ln S_{t-1} (-3,9)			1,64 (7,6)	-0,78 (-3,7)	0,912	0,000	2,241
	-0,016 (-3,7)	-0,27 $\hat{S}_{t-1}$ (-1,7)	+ 0,35 $\hat{Y}_t$ (3,8)		0,41 (2,0)		0,670	0,000	1,838
	-0,017 (-4,3)	-0,25 $\hat{S}_{t-1}$ (-1,6)	-0,30 $\hat{S}_{t-2}$ (-2,4)	+ 0,38 $\hat{Y}_t$ (4,5)	0,35 (1,8)		0,743	0,000	1,569
	-0,02 (-5,3)	-0,42 $\hat{S}'_{t-2}$ (-2,4)	-0,31 $\hat{P}_{t-2}$ (-2,3)	0,44 $\hat{Y}_t$ (5,7)	0,27 (1,3)		0,713	0,000	1,549
Italy (2)	-0,0004 (0,14)	-0,17 $\hat{S}_{t-2}$ (-1,9)			0,24 (1,3)		0,201	0,031	1,999
(2)	-0,003 (-0,8)	-0,17 $\hat{S}_{t-2}$ (-2,0)	+0,11 $\hat{Y}_t$ (1,5)		0,35 (2,0)		0,248	0,040	2,035
	-0,017 (-2,2)	-0,06 $\hat{S}'_t$ (-2,1)	+ 0,83 $\hat{P}_t$ (18,6)	+ 0,96 $\hat{Y}_t$ (20,4)	0,92 (43)		0,945	0,000	1,996

Table 5 (page 2)

Estimation results : Employment Growth in the Private Sector, 1960 - 1982

						ρ_1	ρ_2	$\overline{R}^2$	Pr(F)(1)	DW
United Kingdom	-0,0045 (-1,2)	-0,44 $\hat{S}_{t-2}$ (-2,51)						0,219	0,022	1,576
	9,6 (68,1)	-0,44 ln S_{t-1} (-2,5)				0,97 (44)		0,818	0,000	1,656
	-0,014 (-3,2)	-0,33 $\hat{S}_{t-2}$ (-2,2)	+0,41 $\hat{Y}_t$ (3,1)					0,473	0,002	2,396
	-0,014 (-3,0)	-0,26 $\hat{S}'_{t-2}$ (-1,1)	-0,33 $\hat{P}_{t-2}$ (-2,1)	+0,42 $\hat{Y}_t$ (2,9)				0,443	0,006	2,418
Belgium	-0,0004 (-0,1)	-0,47 $\hat{S}_{t-1}$ (-3,2)				0,42 (1,8)		0,375	0,002	1,873
	7,9 (369)	-0,50 lnS_{t-1} (-4,6)				1,03 (4,17)	-0,31 (-1,4)	0,821	0,000	1,631
	-0,012 (-3,8)	0,23 $\hat{S}_t$ (2,0)	-0,35 $\hat{S}_{t-1}$ (-3,1)	+0,31 $\hat{Y}_t$ (4,7)				0,658	0,000	2,345
	7,77 (105)	-0,47ln S_{t-1} (-4,5)	+0,05 ln Y_{t-1} (2,5)			2,75 (8,7)	-2,4 (-7,0)	0,719	0,000	2,798
	-0,011 (-3,7)	-0,21 $\hat{S}'_{t-1}$ (-1,7)	-0,41 $\hat{P}_{t-1}$ (-3,6)	0,31 $\hat{Y}_t$ (4,7)				0,673	0,000	1,942
Netherlands (3)	993 (2,8)	-123,3 ΔS_{t-1} (-2,8)				0,41 (2,0)		0,472	0,000	1,456
(3)	873 (2,7)	-110,8 ΔS_{t-1} (-2,8)	+379 ΔY_t (2,5)			0,42 (2,1)		0,586	0,000	1,429
(4)	-0,009 (-3,02)	-0,25 $\hat{S}_{t-2}$ (-2,1)	+0,31 $\hat{Y}_t$ (4,6)	+0,02 D (2,1)				0,529	0,002	1,714
	-0,007 (-1,8)	-0,16 $\hat{S}'_{t-2}$ (-0,9)	-0,16 $\hat{P}_{t-2}$ (-1,5)	+0,24 $\hat{Y}_t$ (3,2)		0,37 (1,9)		0,465	0,006	1,749

Table 5 (page 3)

Estimation results : Employment Growth in the Private Sector, 1960 - 1982

					ρ_1	ρ_2	$\bar{R}^2$	Pr(F)(1)	DW
U.S.A.	0,02 (5,3)	$-0,79\ \hat{S}_{t-1}$ (-3,0)					0,282	0,008	1,523
	0,004 (0,17)	$-0,55\ \hat{S}_{t-1}$ (-2,9)	$+0,52\ \hat{Y}_t$ (4,8)		0,511 (2,8)		0,656	0,000	1,712
	9,34 (67)	$-0,55\ \ln S_{t-1}$ (-2,9)	$+0,69\ \ln Y_t$ (15,7)		0,86 (4,5)	-0,30 (-2,1)	0,992	0,000	1,445
	0,003 (0,56)	$-0,09\ \hat{S}'_{t-1}$ (-0,27)	$-0,48\ \hat{P}_{t-1}$ (-2,5)	$+0,47\ \hat{Y}_t$ (4,2)	0,42 (2,0)		0,672	0,000	1,440
Japan (5)	0,01 (5,8)	$-0,18\ \hat{S}_t$ (-2,3)					0,183	0,03	1,913
(5)	0,01 (3,0)	$-0,25\ \hat{S}_t$ (-2,3)	$-0,05\ \hat{Y}_t$ (-0,9)				0,174	0,070	2,037
	0,008 (1,4)	$-0,17\ \hat{S}'_t$ (-2,0)	$-0,06\ \hat{P}_t$ (-0,6)	$+0,03\ \hat{Y}_t$ (0,42)			0,256	0,040	2,143

Notes : (1) Pr(F) is the probability level for erroneously not rejecting the equation on the basis of the F-test.

(2) Unpaid family workers were substracted from employment figures.

(3) Equation using first-differenced variables.

(4) A Dummy variable with value 1 in 1979 and zero elsewhere is added to take into account the statistical break in 1979.

VI. CONCLUSIONS AND POLICY IMPLICATIONS

In this paper it is shown that particularly in the economies of the European Communities the labour share increased substantially during the sixties and seventies, with negative effects on employment and employment creating investments. The growth of the labour share was decomposed into contributing factors which are either under control of the policy makers, such as tax rates; or partially and temporarily under their control, such as the terms of trade through monetary and exchange rate policies; and factors which may be largely exogenous in the short run, such as economic structure or even the growth of real wages. Productivity growth is a special case since changes in employment, in the terms of trade and in labour shares all affect productivity. In several countries it is seen that taxation has significantly contributed to the increase in real wage costs, suggesting therefore immediately policy actions. In countries like Belgium and the United Kingdom, government should beware of the implications of this tax policy for distributive shares and the repercussions on investment and employment.

In some countries (Belgium, Italy) wages are indexed to consumer prices. In this case any exogenous impact on the wage gap, such as deterioration of the terms of trade could only be offset by a reduction in taxation. However, as was seen before, in some countries fiscal pressure was increased at the time terms of trade deteriorated. If one takes taxation as not flexible enough to offset terms of trade fluctuations, and economic structure as evolving only slowly, then employment can only be protected by offsetting terms of trade fluctuations through real wage changes.

One way of achieving this flexibility automatically would consist in indexing wages not to the consumer price index but to the GDP deflator at market prices. Rewriting identity (14) as

$$\hat{S} = (\hat{W}_T - \hat{W}_C) + (\hat{P}_M - \hat{P}_F) + (\hat{W}_C - \hat{P}_M) - \hat{\pi}$$

and noting that the proposed system of indexation implies $\hat{W}_C - \hat{P}_M = 0$ one obtains

$$\hat{S} = (\hat{W}_T - \hat{W}_C) + (\hat{P}_M - \hat{P}_F) - \hat{\pi}$$

and

$$S = -\hat{\pi}$$

if tax rates remain unchanged. Wage negotiations could then focus on the extent to which productivity increases should be passed on to real wage increases.

The advantageous effects of the proposed indexation have been discussed in detail in Steinherr (1978). It might however be useful to recall some arguments here. The present system of indexation has the clear disadvantage of forcing changes in income distribution whenever terms of trade change. There is no rationality in this and it has the strong disadvantage that adjustment if brought about by reducing employment. By contrast, under the proposed method of indexation, terms of trade changes would have no effect on income distribution, the fall in real national income being shared equally by capital and labour, and hence would have no effect on employment either. Moreover, this system of indexation is by no means against the interest of labour. For one it prevents employment fluctuations induced by terms of trade shifts. And, in cases where domestic prices rise more rapidly than world market prices, as well as for the case where the terms of trade improve, domestic wages rise more rapidly than under the present system of indexation. But high wage increases are then entirely justified by improved terms of trade and the spread of wage increases over the whole economy induces the desired reallocation of resources toward the open sector. The examples in Steinherr (1978) illustrate these arguments.

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STATISTICAL APPENDIX : LIST OF VARIABLES AND DEFINITIONS

P_M	Price deflator of GDP at market prices
P_F	Price deflator of GDP at factor cost
P_c	Consumer price index
P_x	Price index of exports of goods and services
P_m	Price index of imports of goods and services
W_T	Employment compensation per employee; total economy
W_C	Gross wages and salaries
E_T	Total employment
E_D	Dependent employment
$Y_G P_F$	Gross domestic product at current factor cost
$Y_N P_F$	Net domestic product at current factor cost
TC	Current taxes on income and wealth paid by non-financial corporate sector
TH	Income taxes paid by households
S 1	Social contributions by employees
S 2	Social contributions by self-employed
Z	$= 1 + TC\ (W_T E_T)$
T	$= TH + S1 + S2$
S_G	Gross labour share $(W_T E_T / P_F Y_G)$
S_N	Net labour share $(W_T E_T / P_F Y_N)$
π_G	Gross productivity (Y_G / E_T)
π_N	Net productivity (Y_N / E_T)

Sources : SOEC (Statistical Office of the European Communities)
OECD, National Accounts
OECD, Labour Force Statistics
Estimates by Commission Staff

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