Determinants of Wage Inflation

A Disaggregated Model for UK: 1964-1971

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〔要旨〕

1958年に発表されたフィリップスの賃金と失業との関係に関する論文は，それを契機として，世界各国で枚挙にいとまがない程に，多くのフィリップス・カーブの計測が行なわれたという事実をみても，賃金インフレーションという研究分野における記念碑業績であった。（フィリップス・カーブの各国における計量分析については，拙稿「賃金調整関数一展望」（飯田編『賃金と物価』日本経済新聞社，昭43）を参照。）フィリップスは，イギリスの長期データを使って，労働の価格としての賃金の変化率は，労働市場の需給条件に依存し，両者の関係は非線型である，という事実を発見した。

少なくとも1960年代までは，フィリップス・カーブ（およびそのヴァリエーション）は，賃金インフレーションの有力な説明仮説であった，と言ってさしつかえない。ところが，1969年ごろから最近にいたるイギリスの賃金動向をみると，フィリップス・カーブは，もはや，近年の賃金爆発ともいうべき状況に対しては，無力となってしまったかのようである。事実，イギリスにおいては，1970年に入って，失業率は戦後最高を記録すると同時に，賃金上昇率は毎年10～15%と，以前に比べて倍以上という驚くべき高さを記録している。端的に言えば，1970年代に入って，これまで存在した賃金（物価）と失業（雇用）との間のトレード・オフの関係が逆転してしまったということができる。これは，現代の経済政策に対する現実からの重大な挑戦である，といって過言ではない。

この論文は，このようなトレード・オフの逆転に対する計量的解明の一つの試みである。言い換えれば，1960年代から1970年代の初めまでの賃金インフレーションを統一的に説明しようと試みたものである。

フィリップス・カーブを出発点として，いくつかの賃金インフレーション・モデルが開発されたが，そのうちで最も注目に値するのは，フリードマンの“期待仮説”であろう。彼によれば，インフレーションの現実値と期待値とのかい離は短期的な現象に過ぎず，長期的には，両者間のかい離は完全に調整され，従ってトレード・オフも一時的なものに過ぎず，恒常的なものではないことになる。ソローは，このフリードマン仮説を，イギリスおよびアメリカのデータに基づいて検証した。筆者の予備的実験によれば，フィリップス・カーブに期待仮説を組込むことは，モデルの予測力を著しく高めるが，それでもなお，1970年代の賃金爆発を説明するには不十分であった。

1970年代の賃金インフレーションを説明するためには，どうしても労働組合のバーゲニング・パワーを無視することはできない。理論的にはともかく，実証的に，交渉力を計測することは極めて難かしい。これまでの研究においては，組合交渉力の指標として，組織率，ストライキ，組合の資金等々が使われているが，いずれも満足な結果を与えるにいたっていない。重要なことは，組合の交渉力が，仮に直接計測できないとしても，経済変数と無関係ではないということである。ド・メニールの研究によれば，労働組合は，労働市場の需給条件が緩和し，従って予想される賃金上昇率が実質賃金の期待上昇率を下回る場合には，極めて戦闘的になることを統計的に検証している。換言すれば，生計費調整係数は固定的でなく，労働市場の条件によって変化するということである。

我々のモデルでは，その他に，賃金波及効果（いわゆる世間相場），ストライキの影響を直接的に考慮している。実際の計測は，1964～1971年のイギリスの製造業（9部門）のデータを利用して行われた。計測結果は極めて良好であり，1970～71の賃金爆発をも十分に説明することができた。

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1. Introduction

A considerable amount of econometric research has been devoted to the explanation of movements in wages, since Phillips (1958) found a statistical relationship between unemployment and the rate of change of money wages, which now bears his name. This so-called Phillips hypothesis has been verified empirically for many countries and for various periods. Recent research directed at improving the theoretical underpinning of the Phillips curve relationship, has given rise to several new wage inflation models. One theory receiving considerable attention is the "expectations hypothesis", which suggests that the rate of change of money wages depends upon the price change expectations as well as the labour market condition. According to Friedman (1968), by whom this hypothesis was most clearly and influentially explained, there can be a discrepancy between expected and actual price changes in the short run, but not in the long run. After the discrepancies between the two have been fully adjusted, there exist no such trade-offs as Phillips curves. Phelps (1968), Solow (1969), Lucas and Rapping (1969a), Mortensen (1970), Rees (1970), Sumner (1972), Saunders and Nobay (1972), Toyoda (1972) and others have examined effects of price and/or wage expectations on Phllips curves. [1]

The purpose of this study is not only to examine the expectations hypothesis, but also to test the plausibility of some other possible hypotheses, i.e. the "spill-over" or "comparison" hypothesis and trade union effect on wage determination, by using a pooled sample of time series observations covering the years 1964-1971, for nine British manufacturing industries. Needless to say, the aggregate wage adjustment function does not always throw light upon the determination of wages at the industry level. The disaggregated study of wage movements could much improve the understanding of changes in the general wage level as a whole. As very few empirical analyses of wage determination have been undertaken so far at the

industry level, this study is expected to add something to the analysis of wage determination.[2]

The basic empirical model of our hypothesis to be tested is given in section 2 of this paper. In section 3 a brief explanation of the data used to estimate the model is given and the model to be tested is specified. The last two sections are devoted to an examination of our estimated results.

2. The Wage Adjustment Function

Since the Phillips and Lipsey hypothesis has been extensively discussed elsewhere in the literature we only describe it briefly here. In essence the hypothesis is that of an adjustment function in the labour market, which suggests that the rate of change of money wages is an increasing (decreasing) function of level of excess demand (supply) in the labour market. Phillips assumed that percentage unemployment is a good proxy for labour market condition and took the rate of change of unemployment and of retail prices into account as explanatory variables. Lipsey (1960), who gave a theoretical reasoning to the Phillips curve from a slightly different point of view, also attributed the rate of change of money wages to the percentage unemployment and the rate of change of it and of retail prices. This so-called Phillips-Lipsey hypothesis has been tested empirically for many countries and for various periods.

Recent controversies surrounding the stability of Phillips curves have given birth to the expectations hypothesis, which is incorporated into the basic wage adjustment function. For its simplest form, the expectations hypothesis for wage determination may be written as

$$\dot{w}_i = \alpha_0 + \alpha_1 u^{-1} + \alpha_2 \dot{p}^* \qquad (1)$$

where

$\dot{w}_t$ = average percentage change in the money wage rate occurring during period t
u = average rate of unemployment during period t
$\dot{p}^*$ = average expectations of the future rate of inflation, held during period t.

The first variable, rate of unemployment, is a proxy for excess supply of labour. It is expected that the inverse relation between unemployment and the rate of change of money wages will be non-linear for the same reasons given by Phillips and Lipsey. The second variable, expected rate of change of retail prices, is introduced as a dominant factor of cost-of-living adjustments. This variable is assumed to work in the process ofcollective bargaining between employers and employees.

The above equation (1) has been utilised as a basis for models which stress noncompetitive aspects of wage determination, as well as for the competetive expectations theory. In competitive situation, the coefficient for $\dot{p}^*$should be equal to unity, which is

the condition for the total adjustment for expected rate of price changes, so that it is the rate of change of real wages that is a stable function of the rate of unemployment. In noncompetitive situation, as a partial adjustment is made for expected rate of price changes, depending upon the strength of trade unions and other noncompetitive factors in the bargaining process, the coefficient for $\dot{p}^*$ may be hypothesized to lie anywhere between zero and unity.

It must be pointed out that equation (1) represents only the basic equation to which additional variables may be added. Following de Menil (1969), an interaction variable between unemployment and the expected rate of change of prices is included in our model. According to him, changes in the cost of living are expected to have a greater wage effect in periods of high unemployment when the excess demand pressure on wages is weak. Under these circumstances, labour is very likely to concentrate on maintaining real wages above some minimum acceptable level. de Menil's hypothesis is tested by adding a new multiplicative price-unemployment variable (with unemployment in reciprocal form). Next we will introduce some variables into our model, which are expected to explain why and how the rate of change of money wages is different between industries.

Firstly we will attempt to take into account explicitly the effect of strike on wage movements, which is labour's chief weapons in the process of collective bargaining. Hines (1964, 1969), Ashenfelter et al (1972), and others argue that the basic reasons for managements displeasure with strike are obvious—loss in revenues and customers' good will, potentially greater wage costs, and so forth—and that trade union also may suffer temporary losses but has the potential to recoup them through a larger wage settlement. Strike is expected to have a definite positive effect (from the labour's point of view) on wage determination. This effect can be tested by using the variable proxied by the aggregate working days lost at the industry level.

Having dealt with the factors originating within the particular industry and economy as a whole, it is now necessary to take into account the interindustry effects on the rate of change of individual industries. Eckstein and Wilson (1962) emphasize the effect of spill-overs, as it is likely that any individual settlement is influenced by recent wage increases obtained by other trade unions or workers. Sargan (1964) also suggests the existence of this effect, which he calls the "comparison effect", in the British labour market. According to him, a trade union, when it puts in for a wage claim, will have an eye on wage bargains struck earlier in the annual sequence of wage settlements. The trade union will compare the wage of its members with some "normal" level of wage rates.

If the union's wage compares unfavourably with the normal wage level, then it will push for higher wage increases and if, on the contrary, it compares favourably with the normal wage level, then pressure on employers for wage increases will not be great. This so-called "spill-over" or "comparison" effect is supposed to be getting more explanatory power in the wage determination model. And this is the one which cannot be tested in an aggregate model. However, the incorporation of this effect into an empirical model is a difficult problem.

Eckstein and Wilson define some heavy industries as "key industries", in the sence that the wage settlements of the heavy industries certainly influence wage bargains in other industries. But how can we identify the key industries? Furthermore, it is very likely that key industry changes every wage round. Therefore, from the view point of empirical econometric model building, the simple introduction of wage increases obtained by key industries, which might be expected to influence a current wage bargain, is neither clever nor advantageous way. Because not only does it present a problem in identifying key industries, but also it obscures the role of other variables by increasing multicollinearity. Instead of introducing the key settlement directly into our model, we assume that a trade union compares the wage level of its members with the normal wage level and concentrates its effort on maintaining the wage level at the normal level as a minimum target.

In order to capture these interindustry effects while avoiding some of the above problems arising from the simple introduction of the key settlement, a variable $\left(\frac{W/i\cdot 1}{W/i^{*}1}\right)$ is entered into our model, where W/i, t is the ratio, at time t, of money wage rates in industry i to the average wage rates in all manufacturing, and $W/i^{*}t$ is the "normal" relative wage.

Computation of the variable requires two measurements ; the first, interindustry relative wages are regularly published ; the second, the "normal" relative wage must be created. The most difficult problem is to determine the "normal" wage structure from which to measure the relative deviations. As we have no theories on how to define normal relative wage structure, we simply assume that the normal relative wage structure is given by averaging the actual relative wage structure over the sample period. In other words the average values of the relative wages of 1964-1971 are used in our model as representative of the normal wage structure. Since wage earners with low wage rates relative to the normal will press for higher wage settlements, the variable should appear in a regression equation with a negative coefficient, and the absolute value of which might be expected to be different in accordance with whether $\left(\frac{W/i\cdot 1}{W/i^{*}1}\right)$ is greater than unity or not. [3]

In addition to the "comparison" effect, the condition of product market will be taken

into account, following Sparks and Wilton (1971). They argue that in highly concentrated industries trade unions are typically strong and firms are able to pass on wage increases in the form of higher prices. Unfortunately we cannot directly test the plausibility of the hypothesis, simply because the data of good quality is not available for the UK economy. Therefore, we will use a variable defined as the relative productivity: the ratio, at time t, of productivity in industry i to the average productivity in all manufacturing. This variable should appear in a regression equation with a positive coefficient.

Our wage adjustment function can now be written as

$$\dot{w}_{it} = \alpha_0 + \alpha_1 u_t^{-1} + \alpha_2 \dot{p}_t^* + \alpha_3 \dot{p}_t^* u_t^{-1} + \alpha_4 ST_{i,t} + \alpha_5 Z_1 \left(\frac{W/i,t-1}{W/i^*t-1}\right) + \alpha_6 Z_2 \left(\frac{W/i\ t-1}{W/i\ t-1}\right) + \alpha_7 \left(\frac{\eta_{it}}{\eta_{0t}}\right) \quad (2)$$

where $\dot{w}_i$ = rate of change of weekly wage rates of industry i; u = percentage of the labour force unemployed; $\dot{p}^*$ = expected rate of change of retail prices; W/i = the ratio of weekly wage rates of industry i to the average weekly wage rates in all manufacturing; W/i^* = the "normal" relative wages, Z_1 = dummy variable which takes 1 if $\left(\frac{W/i}{W/i^*}\right)$ is less than 1, otherwise 0: Z_2 = dummy variable which takes 1 if $\left(\frac{W/i}{W/i^*}\right)$ is greater than or equal to 1, otherwise 0; $\left(\frac{\eta_i}{\eta_0}\right)$ = relative productivity. Our theoretical hypothesis would suggest the following sign conditions for the coefficients:

(1) $\alpha_1 > 0$, (2) $\alpha_2 > 0$, (3) $\alpha_3 < 0$, , (4) $0 < \alpha_2 + \alpha_3 u \leqq 1$, (5) $\alpha_4 > 0$,
(6) α_5, $\alpha_6 > 0$ and $|\alpha_5| \geqq |\alpha_6|$, (7) $\alpha_7 > 0$.

3. Data and Price Change Expectations

A further description of the data used will be found in the appendix. In this section we intend to give a brief idea to the reader of the kinds of data and describe how to generate the price change expectations.

All statistical work has been done with annual observations for the period 1964-1971. The year 1964 was chosen as the starting point simply because of the availability of the consistent data. All rates of changes are expressed as percentage changes from one year before. Thus, $\dot{w}_i = 100 \times (W_1 - W_{i-1})/W_{i-1}$; and so forth. Seventy-two independent observations were obtained by combining time series and cross section data on the weekly wage rates, productivity and aggregate working days lost, respectively, for the 1964-1971 period in the following British manufacturing industries:

(1) food, drink and tobacco,
(2) chemicals and allied industries,
(3) all metals,
(4) leather, leather goods and fur,

(5) clothing and footwear,
(6) bricks, pottery, glass, cement, etc.,
(7) timber, furniture, etc.,
(8) paper, printing and publishing,
(9) other manufacturing industries.

The wage series are annual observations of index numbers of basic weekly wage rates of all manual workers in manufacturing industries.

Although the data on unemployment rate industry by industry are available in the context of UK labour market, we will not use them mainly because they only refer to the industry of previous employment. Given some degree of labour mobility, the concept of an industry unemployment becomes too ambiguous to use since there are few theoretical grounds for assuming that the unemployed labour force should be allocated to the industry where he was employed. Therefore we will use the national rate of unemployment under the assumption that there is sufficient interindustry labour mobility in the UK labour market.

In the absence of direct observations of price expectations, it is necessary to replace $\dot{p}_t^*$ with observable variables.[4]

It will be taken for granted that expected price changes at time t are in some way related to the actual price changes experienced in the past. For the mechanism of expectations formation we use the generally accepted device called adaptive formation of expectations.[5] The adaptive scheme for expected price changes is expressed as

$$\dot{p}_t = \lambda \dot{p}_t + (1-\lambda)\, \dot{p}_{t-1}^* \qquad 0 < \lambda \leqq 1 \tag{3}$$

or

$$\dot{p}_t^* = \sum_{n=0}^{\infty} \lambda (1-\lambda)^n \tag{3'}$$

A common method of combining the wage equation (2) with the scheme of expectations formation, and of eliminating the unobservable variable, $\dot{p}_t^*$, involves a Koyck transformation. However, we will not use it in this study for the following reason.
Estimation results after Koyck transformations very often fail to satisfy sign condition, because models after the transformations have as many additional lagged independent variables as the number of original independent variables.

Instead of eliminating the unobservable variable by a Koyck transformation, we will construct a variety of $\dot{p}_t^*$ variables for different values of λ by using the scheme of adaptive formation of expectations (3'). We can then select the appropriate distributed lag structure by comparing the overall goodness of fit using the coefficient of determination (R^2). Before reporting the results some comments are in order.

In order to construct the statistical series for different values of λ which could

take any value between zero and unity, long-term consistent data for $\dot{p}_t$ are required. As far as the price change series for UK are concerned, no long-term consistent annual data for $\dot{p}_t$ are available for earlier years than 1953. Therefore, λ cannot take the value of less than 0.5 so as to satisfy the condition of $\sum_n \lambda(1-\lambda)^n \geqq 0.9999$. As the starting point of our model is 1964, the maximum number of n is 12.[5] So long as a model is constructed on annual basis, it would be allowed to assume that the present expectations are little influenced by the price changes of more than 12 years before.

4. Empirical Results and Implications

All equations were estimated by ordinary least squares, over the period 1964-1971, by using the pooled data. The regression results of our model are shown in Table 1 for $\lambda = 0.5,\ 0.6,\ \cdots\cdots\cdots\cdots 1.0$.

Table 1—Regression Results of the Wage Adjustment Functions[a]

Value of λ	u^{-1}	$\dot{p}^*$	$\dot{p}^* u^{-1}$	ST_i	$Z_1\left(\frac{W/i}{W/i^*}\right)_{-1}$	$Z_2\left(\frac{W/i}{W/i^*}\right)_{-1}$	η_i/η_0	R^2	$\bar{R}^2$
0.5	63.24 (3.188)	8.420 (4.712)	−15.98 (−3.278)	0.1378 (2.303)	−36.38 (−4.374)	−35.62 (−4.380)	6.807 (1.445)	0.6863	0.6573
0.6	58.60 (3.112)	7.585 (4.639)	−14.38 (−3.241)	0.1404 (2.345)	−34.00 (−4.216)	−33.31 (−4.221)	6.913 (1.470)	0.6865	0.6575
0.7	54.41 (3.073)	6.918 (4.625)	−13.06 (−3.236)	0.1422 (2.379)	−31.99 (−4.104)	−31.34 (−4.107)	7.041 (1.501)	0.6865	0.6576
0.8	50.18 (3.052)	6.334 (4.656)	−11.85 (−3.260)	0.1430 (2.405)	−30.09 (−4.005)	−29.46 (−4.006)	7.204 (1.540)	0.6866	0.6577
0.9	45.83 (3.016)	5.800 (4.688)	−10.68 (−3.240)	0.1437 (2.432)	−28.31 (−3.922)	−27.71 (−3.923)	7.366 (1.578)	0.6860	0.6570
1.0	41.28 (2.968)	5.294 (4.726)	−9.535 (−3.213)	0.1438 (2.452)	−26.47 (−3.823)	−25.91 (−3.824)	7.541 (1.620)	0.6857	0.6567

a) R^2 is the coefficient of determination corrected for degrees of freedom; the numbers in parentheses are t ratios.

Using the coefficient of determination (R^2) as a criterion, we find that when the value of λ is 0.8 the best result is obtained. We can rewrite it as

$$\dot{W}_i = 50.18u^{-1} + (6.334 - 11.85u^{-1})\dot{p}^* + + 0.1430\,ST_i - 30.09\,Z_1\left(\frac{W/i}{W/i^*}\right)_{-1} - 29.46\,Z_2\left(\frac{W/i}{W/i^*}\right) + 7.204\left(\frac{\eta_i}{\eta_0}\right) \quad (4)$$

and

$$\dot{p}^* = 0.8\dot{p} + 0.16\dot{p}_{-1} + 0.032\dot{p}_{-2} + 0.0064\dot{p}_{-3} \quad (5)$$
$$0.00128\dot{p}_{-4} + 0.00056\dot{p}_{-5}$$

We therefore have some evidence that current price change expectations are formed mainly on the basis of the most recent history of actual movement.

Although each of the variables enters significantly, with the exception of productivity, with expected sign, it must be pointed out that a relationship in this form cannot be expected to remain valid over a range extending considerably beyond that of the sample. It is because when interaction terms are present, they can lead to a change in the sign of a partial derivative.

To facilitate interpretation of the coefficient on $\dot{p}^*$ in the presence of interaction effect, the net coefficient is calculated at the sample mean of U^{-1}, which is 0.5.
It is found that the net coefficient of $\dot{p}^*$ for the case of $\lambda = 0.8$ is about 0.4, which is considerably less than unity. In other words, as far as the unemployment rate of UK is 2 per cent, which might be regarded as the policy target for British government,it can be concluded that the strict expectations hypothesis cannot be supported by our data. [6]

5. Further Implications

Using equation (4), the aggregate rate of wage change is given by

$$\begin{aligned}\dot{w} &= \Sigma\omega_i \dot{w}_i \\ &= 50.18u^{-1} + (6.334 - 11.85u^{-1})\dot{p}^* + 0.1430\,\Sigma\omega_i ST_i \\ &\quad - 30.09\,\Sigma Z_1\omega_1\left(\frac{W/i}{W/i^*}\right)_{-1} - 29.46\,\Sigma Z_2\omega_i\left(\frac{W/i}{W/i^*}\right)_{-1} \\ &\quad + 7.204 \end{aligned} \quad (6)$$

The fourth and fifth terms on the right-hand side of equation (6) represents the upward or downward shift in the aggregate wage adjustment equation caused by the wage comparison effect. Thus, if and only if the relative wage structure is stable in the sence that $\Sigma\omega_i\left(\frac{W/i}{W/i^*}\right)_{-1} = 1$, aggregate wage change is dependent only on the rate of unemployment, on the rate of change of price expectations, and on the aggregate working days lost as a whole. In this special case, equation (6) is written as

$$\dot{w} = 50.18u^{-1} + (6.334 - 11.85u^{-1})\,\dot{p}^* + 0.1430\,ST - 22.89 \tag{7}$$

In the following discussion we will deal with this special case in order to examine the long-run equilibrium properties of our model, mainly because analytical methods become quite simple under steady-state conditions.

If we take the aggregate working days lost as a whole (ST) equal to the annual average for the period 1964-1971, $ST = 2.274$, the equilibrium form of the wage equation is expressed as

$$\dot{w} = 50.18u^{-1} + (6.334 - 11.85u^{-1})\,\dot{p}^* - 21.68 \tag{8}$$

Substituting equation (5) into (8) and rearranging the result, we have

$$\dot{w} = 50.18u^{-1} + (5.067 - 9.48u^{-1})\,\dot{p} + (1.267 - 2.37u^{-1})\,\dot{p}_{-1} - 21.68 \tag{9}$$

On the other hand, it could be assumed that price are determined by a mark-up on wages per unit of output in the long-run equilibrium condition. Under this assumption we can derive

$$\dot{p} = \dot{w} - \dot{\eta}_0 \tag{10}$$

Substituting (9) into (10) and rearranging the result, we can obtain a modified long-run Phillips curve :

$$\dot{p} - \left(\frac{1.267 - 2.37u^{-1}}{-4.067 + 9.48u^{-1}}\right)\dot{p}_{-1} = \frac{50.18u^{-1}}{(-4.067 + 9.48u^{-1})} - \frac{21.68}{(-4.067 + 9.48u^{-1})} - \frac{\dot{\eta}_0}{(-4.067 + 9.48u^{-1})} \tag{11}$$

Treating u^{-1} and η_0 as exogenous constants, we can solve this first-order difference equation. The general solution is :

$$\dot{p}_t = C\left(\frac{1.267 - 2.37u^{-1}}{-4.067 + 9.48u^{-1}}\right)^t + F(x) \tag{12}$$

and

$$F(x) = \frac{50.18u^{-1} - \dot{\eta}_0 - 21.68}{1.267 - 2.37u^{-1}} \tag{13}$$

where C is a constant determined by the initial condition. In order that the equation (12) gives a stable solution, the following condition must be satisfied,

$$0 \leqq \frac{1.267 - 2.37u^{-1}}{-4.067 + 9.48u^{-1}} \leqq 1 \qquad (14)$$

Solving the inequality (14) we can obtain the stability condition. That is to say that the British unemployment rate must lie anywhere between 1.9 and 2.2 per cent so as to maintain the price stability.

Appendix : Definition of Variables used in Wage Equations

$\dot{w}_i$ = rate of change of basic weekly wage rates of industry i. The rate of change was calculated as follows :

$$\dot{w}_i = \left(\frac{w_i - w_{i-1}}{w_{i-1}}\right) \times 100$$

W/i = relative wage structure defined as :

$$W/i = \frac{w_i}{w_0}$$

where w_0 is the average basic weekly wage rates in all manufacturing.

W/i * = "normal" relative wage structure, which was calculated as follows :

$$W/i^* = \frac{1}{8}\sum_{t=1963}^{1970} W_{i-t}$$

ST_i = index number (1964 = 1.0) of the aggregate working days lost of industry i. See *the Department of Employment Gazette.*

η_i = output per employment of industry i.

$\dot{p}$ = rate of change of retail prices (all items).

The source of all data was *the Monthly Digest of Statistics* unless otherwise stated.

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Notes

1. Their models and data are considerably different. Solow (1969) used U.S. quarterly data for 1929 Q1-1964 Q4 and British annual data for 1948-1966 and quarterly data for 1956 Q1-1966 Q4, while Parkin (1970) and Saunders and Nobay (1972) used British quarterly data for 1948 Q3-1969 Q1.
2. It is rather surprising that very few empirical studies of wage determination have been undertaken so far at the industry level in the United Kingdom, since we would consider that industrial analysis is a must considering the hazarads outlined by Lipsey (1960) in drawing policy implications from an aggregate Phillips curve.
3. This hypothesis will be tested by introducing two coefficient dummy variables, Z_1 and Z_2 in our study.
4. S.J. Turnovsky and M.L. Wachter (1972) used directly observed expectations data for the U.S. in their study.
5. In other words, λ and n are chosen so as to satisfy the condition $\sum_{n=0}^{n}\lambda(1-\lambda)^n \geqq 0.9999$, on the condition that n cannot exceed 12.
6. A similar conclusion would seem to hold for the United Kingdom, judging from the results obtained by Solow (1969) and Parkin (1970).

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上記研究報告は，ケンブリッジ大学へ留学中の筆者がその研究成果をとりまとめて送付して来たものである。