INFLATION: THE LABOUR MARKET

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This essay is one of four to be published as Inflation, Hutchinson University Library Series 1975. The full contents are:

- Wynne Godley
  Inflation: A Neokynesian View

- Michael Parkin
  Inflation: A Monetarist View

- Peter Wiles
  Inflation: A Cost Push View

- David Metcalf
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References
This essay examines four aspects of 'the labour market and inflation'. First, the role of unions in the inflationary process is considered. Second, studies which analyse inflation by breaking the labour market down into its constituent parts, such as regional or local labour markets, are discussed. Third, the functioning of the labour market is examined to give some insight into how unemployment can be reduced for a given level of excess demand. Finally, pay policy and indexation are evaluated.
I. ROLE OF UNIONS

I.1 Background

The role of unions in the inflationary process is a subject of great controversy. Some writers, especially monetarist followers of Friedman, believe unions to be innocent as new born lambs. Other analysts believe that they are the prime movers in the generation of inflation. This debate is encapsulated in the contributions of Parkin and Viles in this volume. Unfortunately not all writers state their position as clearly as Parkin and Viles and confusion abounds in the discussions over union power.

In an attempt to overcome this confusion we proceed in stages. We first consider whether unions have any impact on the structure of relative wages prevailing at a point in time (Section I.2). Next we examine the evidence on the role played by union militancy in the explanation of money wage changes (Section I.3). We then discuss in more detail how the monetarist position can be distinguished from the cost push view and present a "middle ground" view of the role played by unions (Section I.4). The final section discusses recent attempts to explain strike activity.

Before proceeding we present some background information on unionization in Britain.

The number of unions has fallen in almost every year in the post war period. In 1946 there were 757 unions, reduced to 469 by 1971. However total union membership has grown during the same period. In 1946 union membership stood at 8.8 million (7.2 m. males and 1.6 m. females) and rose
to 10.9 m. by 1971 (3.2 m. males and 2.7 m. females). In the ten years prior to 1968 union membership reached a plateau of approximately 10 m., but rose dramatically between 1968, when it stood at 10.06 m., and 1970 when it had risen by a million to 11.04 m. - an increase of 9.5 percent in two years.

It should be noted that even when total union membership is roughly constant there are substantial gross flows of recruits into and lapses from unionization. For example in a recent year the Amalgamated Engineering Union had a net gain of 10,000 in its total membership (equal to 1 percent) but this involved 160,000 new members and 150,000 lapses (Hughes 1967).

The proportion of the labour force unionized is sometimes used as a measure of union strength or militancy. These figures are presented in Table 1. It will be seen that this proportion has not fluctuated much since the war. The main change which has occurred is the increased proportion of the female labour force that is unionized.

The bulk of union members belong to big unions. In 1971 there were eleven unions with a membership greater than 250,000. They accounted for only 2.3 percent of the number of unions but 61.4 percent of union membership. In contrast, the 250 unions with a membership under 1000 accounted for 53.3 percent of the number of unions but only 0.6 percent of union membership. (The data above have been taken from DE 1971 a, 1971 b).
TABLE 1

Proportion of the UK Labour Force Unionized

<table>
<thead>
<tr>
<th>Year</th>
<th>Union Membership (thousands)</th>
<th>Union Membership as a Percent of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1951</td>
<td>7745</td>
<td>1970</td>
</tr>
<tr>
<td>1961</td>
<td>7911</td>
<td>2005</td>
</tr>
<tr>
<td>1971</td>
<td>8216</td>
<td>2720</td>
</tr>
</tbody>
</table>

Source: DE(1971 a) Tables 124, 196, DE(1971 b) Tables 52, 141
1.2 Unions and Relative Wages

The foundations of the power of a union to raise the level of its members' wages relative to the wage received by nonunionized employees of identical quality must be studied from both the demand side and the supply side of the labour market.

The four Marshallian conditions concerning the elasticity of derived demand set out the basis of union power from the demand side. They state that the demand for labour is more inelastic (i) the lower is the elasticity of substitution ($\sigma$) between labour and other factors of production; (ii) the smaller is the price elasticity of demand ($\eta$) for the final product; (iii) the smaller are labour costs in total costs; and (iv) the more inelastic the supply of other factors. These conditions were modified by Hicks who showed that, assuming constant returns to scale, condition (iii) holds only when $\sigma < \eta$ or in his own words "it is 'important to be unimportant' only when the consumer can substitute more easily than the entrepreneur."

Unfortunately no complete evidence exists on the Marshallian conditions applied to labour in particular industries and occupations, although it seems probable, a priori, that they confer more power on craft unions than on general unions. Phelps Brown (1967 a) states that airline pilots and newspaper press operators have raised their relative pay substantially because, at least in the short run, they are indispensable and because their wage costs are a relatively small part in total costs.
If a particular group is able to restrict the supply of entrants into an occupation, for example by operating a closed shop or restrictive apprenticeship rules, their wages will tend to be higher than if no such restrictions existed. This might occur in the professions such as medicine and law (Monopolies Commission 1970) and has also been held to occur in occupations such as printing (McCarthy 1964) and meat portering (Rotenberg 1959).

Two different types of studies have attempted to determine whether collective bargaining and unionization have, in addition to the very specific effects described above, a more general impact on the wage structure. Phelps Brown (1967 a, b) examined historical data concerning the advent of collective bargaining. He found that the coming of collective bargaining reduced the dispersion of rates paid to labour of a given grade in different employments by enforcing a minimum which extinguished exceptionally low rates. It is interesting that in the post war period when many nationally negotiated industry wide collective bargaining agreements have been topped up by local negotiations substantial wage dispersion for a given grade of labour has reappeared, cf Mackay 1971 and Robinson 1970). Further, collective bargaining was found to have an impact effect on the wage structure. Typically, the advent of collective bargaining raised the pay of the group by around 10% to 15% (once and for all) but as successive groups established collective bargaining the original order in the wage league table was restored.
More recently Pencavel (1974) and Metcalf, Nickell and Richardson ( ) used data on union membership by industry in an attempt to test whether industries which have a high proportion of their labour force unionized pay higher wages, *cet. par.* than industries with low levels of unionization. It should be noted that the degree of unionization *per se* is by no means a perfect measure of union power stemming from the Marshallian conditions of supply restrictions; this may account for the fact that no strong relationship was found between the degree of unionization and relative hourly earnings. However, Pencavel found that unions raised earnings in those production industries where plant bargaining took place in addition to industry-wide bargaining: in essence the industry wide bargain set the wage rates for all firms in the industry, but militant unions had some success in raising earnings levels at plant level - causing hourly earnings to be up to 10 per cent higher than they otherwise would have been. There are, inevitably, problems associated with these tests of the degree of unionization on the industrial wage structure. For example the causal relationship may run from high earnings to a high degree of unionization rather than vice versa; or it may be that the true cause of the higher hourly earnings at plant level in some industries is not militant unionism but different payments systems or temporary disequilibrium in the relative excess demand for labour across the different industries.

The evidence discussed in this section hints that at least some union members get higher wages than similar labour quality elsewhere. It is not yet clear whether the impact of unions on the structure of relative wages occurs only at certain times, for example with the advent of
collective bargaining, and only at certain narrowly defined points such as the pay of specific crafts, or whether the union impact is more general and is associated with the degree of unionization across industries and occupations. The problems encountered in this cross section empirical work - simultaneity between unionization and earnings and the extent to which unionization is a good measure of militancy and/or power - occur with similar force when examining the role of unions in the inflationary process.

I.3 Unions and Money Wage Inflation

It has been demonstrated that unions have some impact on the structure of relative wages. This does not necessarily imply that they influence the overall level of money or real wages at a point in time -- such a question can be analysed by general equilibrium analysis (e.g., Johnson and Mieszkowski 1970). Nor does it necessarily mean that unions are central to the process of wage inflation -- it is to this latter topic that we now turn. We seek to understand whether unions influence money wage inflation independently of excess demand; this is perhaps the most fundamental issue in the current debate on inflation. If unions are at the heart of the inflationary process then policies to inhibit their power over money wage changes, such as some form of pay policy or revised industrial relations legislation, are central to the control of inflation.
(This is not to deny that inflation could be moderated by reducing aggregate demand sufficiently.) Alternatively, if unions are passive agents in the process, the authorities must look to other measures such as the control of the money supply to limit inflation.

The seminal study on the role of unions in the inflationary process is that of Hines (1964) who set out an index of trade union pushfulness \( \Delta T = T_t - T_{t-1} \), where \( T_t \) denotes the proportion of the labour force unionised, or union density, in year \( t \). Hines thesis was that \( \Delta T \) is a measure of union activity which manifests itself simultaneously in both increased union membership and density and in pressure on money wage rates. He tested this hypothesis with aggregate data from 1893-1961 and found, broadly, that through time excess demand for labour had become less important as a cause of inflation and that in the post war period when pushfulness was a key factor in the explanation of inflation. The importance of unions in industry level wage adjustment was confirmed in a subsequent article (Hines 1969).

Given the controversial nature of this topic and the originality of Hines' contribution it is not surprising that Hines' work has been subjected to careful scrutiny. The most wide ranging critique is that of Purdy and Zis (1973) who examine Hines' theory, data, estimation technique and interpretation.

Their main criticism is that Hines presents no theoretical underpinning for the proposition that militancy (\( \Delta T \)) shows simultaneously in increased
membership and in upward pressure on wage rates: "There is a presumption in his theory that unions aim to drive up their members real wages by exerting pressure on money wages; that unions aim to extend the organized proportion of the labour force lying within their jurisdiction and that the rate at which they succeed in carrying out this latter objective is a major determinant of their success in pursuing the former." (p. 296).

However, none of this comes out of a formal model of union behaviour or a discussion of what unions do when conflicting objectives, e.g., higher wages associated with lower employment, occur. Even more important, theoretically, is that the pushfulness view pays little attention to the employer. Hines argues that, through time, employer resistance is of less consequence because of the wage round and because of administered prices. Whilst this may be true it is still likely, a priori that the secular reduction in employer resistance will have some cyclical variability superimposed on it -- in the motor industry, for example, employer resistance is related to the demand for cars, indeed there is evidence (Turner, Clark and Roberts 1967) that employers initiate strikes when demand is slack -- and this should be discussed in the wage adjustment model.

A second criticism of the union pushfulness model is that it is not clear what \( \Delta T \) measures: it is defined as a measure of militancy but the contribution of unions to the process of inflation may depend more on their strength than on their militancy. This distinction is slippery but not trivial. If unions are strong they may get large money wage
increases with a small show of militancy (indeed, if they operate a closed shop AT, the militancy measure used by Hines, is by definition zero, see below). Further many labour historians (Phelps Brown 1968, Ross 1959) believe unions were more powerful (militant?) in forestalling and minimizing money wage cuts in the interwar period than they are in obtaining wage increases -- in the words of Phelps Brown unions are stronger when they act as the anvil rather than the hammer.

Two semi-statistical problems concern (i) simultaneity between union density and wage changes and (ii) the fact that union density may not be independent of excess demand. The proportion of the labour force unionised is a function of the costs of organization, as measured by factors such as number of workers per plant, the benefits of membership and simply whether the union member can afford his dues. It is well known (Hobsbawm 1964) that over long periods union membership is positively related to economic activity; for example, union membership fell steadily between 1926 and 1933 and rose steadily during the mid and late 1930's. It seems likely therefore that the level of union membership depends in part on money wage changes and on the level of excess demand.

Furdy and Zis point to data problems within the union pushfulness model. One such problem is that until recently there has been little variability in AT in the post war period. More important, where a closed shop exists the basis for using AT as a measure of militancy is unclear because union membership will only rise or fall as employment in the closed
shop sectors rise or fall. Purdy and Zis quote evidence from McCarthy (1964) who estimated that 3.75 million workers were employed in closed shop establishments and a further 1.35 million were in open shops within trades where the closed shop practice predominated, and which were therefore quasi-closed shops enforced by informal sanctions. In all 22 per cent of manual workers were covered by closed shop arrangements and these constituted 9 per cent of manual trade unionists. It is clear therefore that in large numbers of plants increased union activity is unlikely to be reflected in $\Delta T$ because the employees are already completely organized.

Finally, Purdy and Zis found that when they re-estimated the union pushfulness model to take account of their various criticisms, the impact of $\Delta T$ on wage changes, although still positive, was much reduced. This is confirmed by Wilkinson and Burkitt (1973) who used carefully constructed data on unionisation by industry and found that $\Delta T$ is significantly associated with wage changes in only one industry, textiles, out of the eleven they studied.

Partly in response to these criticisms the recent work on the role of unions in the inflationary process was developed in two directions. First, Johnston (1972) drawing on the earlier work of Hicks, set out a full bilateral monopoly bargaining model. This model was tested by Johnston and Timbrell (1973) who found frustrated expectations concerning the rate of growth of real consumption to be an important influence on the rate of
Inflation: the more real wages fall cumulatively behind a desired target growth rate the faster money wages grow subsequently. Second, much of the empirical work (e.g., Godfrey 1971, Godfrey and Taylor 1973 and Taylor 1974) has replaced $\Delta T$ as a measure of union militancy by strike activity. The particular measure of strike activity chosen has been the number of strikes but little justification has been provided for preferring this measure over the alternatives which are, the number of working days lost and the number of workers involved in strikes. The results using this variable are superficially impressive. During the post-war period the number of strikes is significantly (positively) correlated with wage inflation at macro level and Taylor finds that the two variables are positively related when he estimates a wage adjustment equation separately for 16 production industries, but in this latter case the strikes coefficient is significant in only half the industries.

Before these results are seen as a strong confirmation that militancy pays they must, just as with $\Delta T$, be examined carefully. In the first place there are some problems with the data. These are of three sorts. The Department of Employment classifies strike activity according to the principle reason for striking and this classification shows that the number of strikes over wage increases as a per cent of the total number has risen steadily from less than 10 per cent in the early 1950's to 56 per cent by 1970. It is not clear whether all strikes should be included as a militancy measure or whether only those concerned with wage increases are the
correct measure; the latter appears a priori more sensible but has not been used or discussed in the literature. Second, the number of strikes exhibits a clear seasonal pattern: they tend to be relatively low in the summer months and in December. To the extent that the number of wage bargains struck are also relatively low at this time (cf. IMS 1974 p. 12) a (spurious) relationship will occur between aggregate wage changes and aggregate strike activity. Third, the use of strike activity to proxy militancy ignores other forms of union behaviour such as synchronized absenteeism (the sick-in) or the work to rule which may be superior militancy measures.

The interpretation of the positive association between strike activity and money wage changes is tricky. For example Taylor (1974 ch. 6) reports that strikes are not significantly related to wage inflation when an incomes policy is "on" but they are so related in policy "off" periods. This finding can be interpreted in two ways. Those who believe union power is important would say that there is in general no point in striking when an incomes policy is on because wage increases above the norm are disallowed by government fiat; rather militancy (in the form of higher strike activity) pays when there is no public interference in bargaining. However, an alternative rationale is that a pay policy merely suppresses and postpones for a while the money wage increases inherent in the underlying inflation and therefore once the pay policy is lifted the pace of money wage changes
is bound to accelerate: strikes are picking up what should more correctly be attributed to monetary mismanagement.

A more severe problem concerns the underlying economic analysis of the relationship between strike activity and money wage inflation. Taylor, Godfrey and others have provided us with the important empirical fact that on average strikes and wage inflation are positively associated. It is now necessary to justify this finding theoretically. There are two strands to this. First, accepting that unions become suddenly more militant, for example they increase the size of their wage claims and are more prepared to strike, by what mechanism do higher wage settlements come about? We see, again, that no attention has been paid to the employers role in the bargaining process (indeed, in very recent empirical work (Johnston and Timbrell 1973, Ward and Zies 1974), which examined both employer and union utility, strike activity appears not to be an important determinant of inflation). Second, if strike activity pays, what determines when the unions will be militant? This is discussed in more detail below and may depend on such factors as workers conceptions of fairness or the availability and amounts of state and union payments which reduce the opportunity cost of striking.

It is clear from the discussion in this section that we can come to no firm conclusion concerning the place of unions in money wage inflation. An empirical association between militancy, measured by $\Delta T$ or strike activity and wage inflation, appears to exist (although it may be weaker
than was first thought) and research which has tested for this relationship has been quite sophisticated. However the empirical findings have no firm theoretical underpinning and therefore those who believe in the irrelevance of unions are reluctant to change their minds. What is now needed, if progress is to be made in understanding the role of unions in the inflationary process, is not further studies which analyse the relationship between wage inflation and ΔT or strike activity at industry level or occupation level or across countries but rather some studies which provide (i) a careful specification of the circumstances under which militancy leads to higher wage changes independently of other variables — clearly any such discussion must not overlook the demand side of the labour market. The bargaining model of Johnston (1972) has provided a useful foundation on which to build because it sets out fully the factory influencing the wage offer and wage claim prior to estimating the wage adjustment equation; (ii) an objective measure of militancy: this is clearly a difficult task and the problems are nicely surveyed in Purdy and Zia (1974).

I.4 Union Power Versus the Money Supply

The statistical studies discussed above have neither confirmed nor rejected the central place of unions in the inflationary process and, in consequence, the debate concerning the underlying causes of inflation continues unabated. It is generally agreed that a correlation exists be-
tween the growth in the money supply and the rate of inflation and that this correlation is stronger in the long run than in the short run. What is in dispute is whether inflation is caused by excessive growth in the money supply or whether union power or some other social force causes money wages to rise which in turn induces the authorities to expand the money supply in order that unemployment does not result consequent upon those wage increases. Those who hold the former view see the cure for inflation in a deceleration in the rate at which money is created whilst those who believe that unions are the key tend to favour a pay policy to reduce inflation.

The clarity of the dispute has, unfortunately, been blurred recently by ambiguous statements by the protagonists. In particular the monetarists have recently stated:

"If the increase of union wages induces the authorities to expand the money supply either to finance public expenditure designed to reduce any concomitant unemployment or to finance the deficits of nationalised industries then such action will indeed be inflationary. It is simply not possible for the trade unions to be so powerful as to cause prices to rise generally unless there is concomitant increase in the money supply."

(Economic Radicals 1974)

This proposition was restated by Pearce, one of the signatories to the Letter to the Prime Minister, in the monetarist debate in The Times in October 1974. He argued that the power of trade unions to create inflation is no stronger than the willingness of the government to validate wage increases by creating money.
This view is rather more moderate than the traditional monetarist view. It allows that trade unions may have some power to cause prices to rise providing the government manages its monetary flows to accommodate the wage set by the unions. This is very similar to the hypothesis advanced some twenty years ago by Hicks (1955) who argued that Britain was on a "labour standard": whatever the wage set by collective bargaining the government managed the economy to ensure full employment -- in effect the labour standard had replaced the gold standard for purposes of internal economic management.

The particular reason why the quoted statement blurs the debate is that many observers would interpret such a sequence of events as evidence in favour of cost push inflation; for example this is the view of Branson (1972 p. 326) who, in his widely respected textbook, argues that such a pattern of events is evidence that the government is validating what is essentially a cost push inflation via its aggregate demand policy. Similarly Phelps Brown, who is a firm believer in modifying the system of collective bargaining because of a shift in the balance of power towards trade unions (1971), believes that the sequences described by the monetarists is precisely that which has existed in the last 30 years; he sees the key feature of the post World War II period as the "soft market environment": if employers made wage settlements that raised unit wage costs, governments would not in the event deny them the flow of monetary demand to keep their capacity fully occupied at the new wage level of costs. In such a setting
resistance by any one group of employers to a wage settlement of the pre-
vailing size came to be seen as futile and needless (1967a para. 12).

It is clear that some sharply defined tests which distinguish the
two views are necessary. This is not just because such tests will satisfy
intellectual curiosity, but rather the correct directions for macropolicy
hinge on determining whether unions are, in part, responsible for cost and
price rises. The monetarists recently proposed a test to get at the union
power issue. The Economic Radicals (1974 Table 1) suggested an examination
of labour's share in national income. They demonstrated that wages and
salaries (net of income tax and employees national insurance contributions)
fell as a proportion of national income from 58.4 per cent in 1948-50 to
55.7 percent in 1970-72 and inferred from this evidence that the power of
unions is therefore illusory. Such a conclusion is too hasty on a number
of grounds. First, on a theoretical plane, movements in labour's share in
national income depend on the elasticity of substitution (σ) between labour
and other factors as well as wages, and σ was ignored in their analysis.
Second, if we wish to draw conclusions about the power of unions over the
distribution of national income and their responsibility for rising costs
and prices we should, a priori, examine the share of wages and salaries
prior to deductions for income tax and national insurance contributions:
in this case labour's share rose from 65% in 1948 to over 68% in 1972.
Third, given the secularly increasing importance of the public sector we
should not be surprised that post tax wages fall as a proportion of GDP.
Finally, the share of profits in national income and the rate of return on capital have dropped dramatically recently. In an extremely thorough article Burgess and Webb (1974) show that whichever method is used for the calculation, profits have declined markedly as a proportion of national income in the last two decades. For example, the calculation which shows the smallest decline in pre-tax profits (non-nationalised companies gross trading profits less stock appreciation as a percent of GDP) shows that share falling from 14.4 percent in 1950 to 10.3 percent in 1972 -- a reduction of over one quarter in the share of GDP going to profits in the post-war period. Presumably this is evidence, on the monetarists own groundrules, that unions are powerful -- indeed it has been seen by some commentators (Olyn and Sutcliffe 1972) as hailing the demise of British capitalism.

It seems likely that we must turn to microeconomics to get a clear understanding of the part played by unions in the inflationary process. For example if it could be demonstrated that unionised sectors received large wage settlements in times of heavy unemployment or severe deceleration in the rate of growth of the money supply and that such settlements were followed, with a lag, by the non-union sectors, this would hint that unions are not irrelevant. A more narrow test would be to examine wages in construction: in 1974 the construction industry was badly affected by a reduction in financing available for both public and private work. If construction wages rose as rapidly in 1974 as they did in 1972/73 or if the gap between the hourly minimum industry rate and actual hourly site earnings did not lessen this again would be a fragment of evidence in favour of
the supply side view of the inflationary process.

Some progress has been made recently towards a sensible synthesis of the demand and supply side views. For example both Tobin (1972) and Hicks (1974) have developed similar models which emphasise that the labour market is not one market but is composed of many markets by industry, occupation, area, etc. If one market is in disequilibrium with excess demand for labour, wages will be pulled up in that market and this wage rise will in turn, via either equity or labour supply considerations, feed into the other markets: inflation is initiated by excess demand factors and transmitted by the institutional arrangements and social pressures prevailing in the labour market. Hicks states that such social pressures "may take the form of strikes, but that may not be necessary. Any arbitrator will agree that a rise in wages is 'fair'. And it will be clear to employers that they must raise wages for the sake of 'good industrial relations'". This certainly seems precisely the sequence of events which has occurred in many public sector pay settlements in the last few years.

This multisector view makes clear that there is merit in both the monetarist and the social force views of the inflationary process. The various markets which make up "the labour market" tend to have at any point in time different levels of excess demand. Those with large positive excess demand experience large money wage increases (the monetarist element) whilst those with excess supply do not, as in the past, experience money wage cuts. An active employment policy which aims for full employment 'on average' implies that some markets will always be experiencing excess demand and the
wage increases in such markets spillover into the other markets via social pressures such as arbitrators' conceptions of equity or union power (the cost push element).

The literature which examines wage inflation by disaggregating the various components of the labour market is not large and it is too soon to say whether the a priori plausible hypotheses of Hicks and Tobin are correct. This literature is discussed in Section II.

I.5 Strike Activity

Not only has strike activity been included as an explanatory variable in wage adjustment equations recently, but also a number of studies have attempted to explain strike activity itself. The three measures of strike activity -- the number of strikes, the number of workers involved in stoppages and the number of working days lost because of strikes -- are very different measures of strike activity; most of the empirical work has concentrated on explaining the number of strikes.

Analysis of strike incidence is a tricky problem. A variable included in an explanation will typically affect the behaviour of both workers (and their official or unofficial representatives) and employers. In general the impact on the employer's behaviour will be the opposite of the impact on the worker's behaviour and it is therefore difficult to get an unambiguous prediction concerning the relationship between a particular economic variable and strike activity. Consider the following example: high or rising profits are sometimes said to result in greater militancy and higher
wage demands. On this score more strikes would be predicted as profits rise. However, rising profits may be associated with a softer bargaining stance by the employer, causing fewer strikes. The net impact of profits on strike activity is clearly ambiguous. This same problem occurs for most of the variables that have been included in recent analyses of strike activity such as unemployment (e.g., high unemployment might reduce wage claims but simultaneously strengthen employer resistance), recent movements in wages and prices and in labour productivity increases. Studies which try to explain the number of strikes (e.g., Pencavel 1970, Knight 1972, Wilkinson and Turner 1972) have tended to concentrate on workers behaviour and pay less attention to that of employers. A notable exception, however, is the recent study by Shorey (1974) which sets out a full (structural) model of the employer's wage offers and worker's wage claims prior to estimating the (reduced form) regressions to explain strike activity.

The evidence from these studies is reasonably consistent and for our discussion of inflation two findings are particularly important. First, strike incidence tends to rise the slower the recent growth of net real earnings. This is particularly well documented in the Wilkinson and Turner study. They find that real earnings net of income tax and national insurance contributions stagnated between 1965 and 1968 causing increased labour unrest in the late 1960's because expectations of successively higher real net earnings, built up in the early 1960's, were frustrated.

Second, Shorey undertook an interindustry study of strike incidence in addition to a time series analysis. He found a lower strike propensity in industries which had a small dispersion of earnings amongst the different regions of Britain. Further, strike activity increased if the industry
got seriously out of line from its traditional place in the industrial wage structure. These findings hint that workers' perceptions of fairness cannot be overlooked in explanations of strike incidence.

Recently there has been considerable controversy surrounding the possibility that strike activity may have increased partly in response to "state subsidies" for strikers. It has been suggested that strike activity has increased in response to higher supplementary benefits and PAYE income tax rebates, which both reduce the foregone earnings from striking. (Supplementary benefits are paid as a right to ensure that minimum standards of subsistence and shelter are maintained. They are paid both to groups who do not qualify for National Insurance benefits and to people whose National Insurance benefits are inadequate in relation to their requirements. In the case of strikers the benefits are ostensibly paid to the family of the striker and not, in general, to the striker himself.)

Gennard and Lasko (1974) examine the interrelationship between strike activity and supplementary benefit payments and suggest a number of reasons why they may be positively related; for example short strikes might become long strikes because if a settlement has not been reached by the second week the supplementary benefits, which typically commence in the second week of a strike, lower the costs of staying on strike longer. Since 1969 the number of strikers receiving benefits has certainly grown hand in hand with strike activity. However Gennard and Lasko are sceptical that the causal relationship runs from receipt of benefit to strike activity; they state that "...at most one in seven of all the strikers in any year received
benefit [and] no more than a half of those strikers who were eligible for benefit have, in fact, claimed."

Durcan and McCarthy (1974) similarly find little evidence of a general association between tax rebates and strike activity. However, when they examine this relationship for the low paid they find that the variables are positively related, which might reflect the fact that the tax rebates as a proportion of earnings have grown in the last decade rather more for the low paid than for the higher paid.

These two studies are a most useful contribution to the ongoing debate on the role of the state when strikes occur. However, two further points should be noted. First, public concern about "state subsidies" for strikers is probably directed more towards stoppages which appear to have a harmful impact on the economy than to strike activity in general. It is therefore necessary to complement these broad analyses by studies of particular strikes in order to assess, for example, how much tax rebates and social security payments contribute to strikers' income over the stoppages, the take up rate of supplementary benefits amongst those eligible and whether the availability of such payments weighed heavily in the decision to call or prolong the strike. Second, it may be that these payments have actually reduced strike activity but worsened inflation. If employers now believe that workers are more prepared to go on a long strike because of the existence of these benefits they may make higher wage settlements (avoiding costly strikes) than they would if they believed workers would not strike.
II. DISAGGREGATED ANALYSES OF THE WAGE INFLATION PROCESS

To fully understand the inflationary process, and to be able to suggest efficient and equitable labour market policies to modify inflation, it is necessary to have some knowledge of the linkages which exist amongst the various micro labour markets. Unfortunately, economists have paid rather little attention to the operation of these micro labour markets, and the extensive industrial relations literature has only recently begun to consider the efficiency of the industrial relations system in relation to the problem of inflation. The evidence presented below is therefore preliminary.

The thrust of the research on wage movements at a disaggregated level has been towards discovering whether there exists a leading sector, a particular region or industry for example, whose wage increase gets transmitted with only minor modification, to the other sectors. Whilst some tentative evidence in favour of this process exists (Section II.1) the precise nature of the transmission process is rarely elaborated (Section II.2); however, if we are prepared to accept the results, the analysis is rich in policy implications (Section II.3).

II.1 Evidence

Regional labour markets have received more attention than other narrowly defined labour markets in part because of economists' long interest in regional policy. Regional wage differentials have been remarkably stable despite persistent differences in the regional unemployment rates. This
fact leads, as Mackay and Hart (1974 b) point out, to two interesting, interrelated, lines of investigation. First, what is it that holds the regional wage structure together in view of the regions' different labour market experience? Second, if a given national unemployment rate were to be associated with less dispersion in regional unemployment would the rate of wage inflation be lower?

Thirlwall (1970), Metcalf (1971) and Archibald (1972) have each demonstrated that one important factor in preserving the regional wage structure is national wage bargaining.

A study which analysed in detail the institutional structure of the engineering industry labour market (Lerner and Marquand 1963) found that local bargaining resulting in earnings increases substantially in excess of the nationally negotiated wage rates occurs initially in regions experiencing an excess demand for labour, and that these higher earnings spread out over the other regions via the mechanism of the shop stewards combine committees. Mackay and Hart (1974 a) in a careful study, provide econometric support for this hypothesis using data provided by the Engineering Employers Federation disaggregated to the level of the town. Although the mechanism by which similar earnings increases get spread out around the country is complicated "for London itself there is a very significant relationship between earnings changes and excess demand pressure, which may be transferred to other markets whose own earnings changes show little association with local excess demand pressure . . . . [further it is] possible that earnings changes in local labour markets exhibit strong associations with wage leaders in their more immediate vicinity."
Whilst this institutional and econometric evidence relates only to engineering and does not necessarily hold for other sectors (cf. Lerner, Cable and Gupta 1969) it prompts the question: if, for a given national unemployment rate, unemployment rates were more evenly distributed spatially would the aggregate rate of money wage inflation be lower?

There are two reasons, a priori, why the dispersion in sectoral unemployment and inflation might be positively related. First, if each sector has similar non-linear Phillips curves (or, under certain circumstances, linear curves with different locations) the macro Phillips curve will lie above the micro curves. This is known as the aggregation hypothesis. Second, if the low unemployment sector is the wage leader macro inflation is largely determined by its unemployment rate and not the economy unemployment rate. The aggregation hypothesis has been much studied, although the data show quite plainly that the sectoral Phillips are not identical but that the curves for the high unemployment sectors, which have similar wage increases to the low unemployment sectors, lie above the curves for the low unemployment sectors. It seems likely therefore, that if dispersion in sectoral unemployment is positively associated with inflation this is because of spillovers rather than aggregation.

The possible link between lower dispersion in spatial unemployment and a lower inflation rate was responsible, in part, for the regional policy of the mid 1960s which, for example, limited office building in the southeast and subsidised employment with the regional employment premium in the high unemployment areas. A number of studies
have investigated this link by including the dispersion of regional unemployment rates as an explanatory variable in models of macro wage-adjustment. The results, unfortunately, are inconclusive: A sample of the empirical work shows that Archibald (1969) and Thomas and Stoney (1972) both find a significant positive association between the dispersion of regional unemployment and the rate of money wage inflation but Thirwall (1969) and Mackay and Hart (1974 a) do not, although the latter believe that there exists an underlying relationship between the dispersion of spatial unemployment and wage inflation but that this relationship is masked because the absolute dispersion and the average level of unemployment are themselves positively correlated.

A number of studies exist on the interrelationships amongst industrial wage movements. Kaldor (1959) initiated a model in which the engine room of the inflationary process is the rate of increase in labour productivity in the production sector. In this model, firms in the production sector can afford to pay relatively large annual wage increases without their unit labour costs rising much because of the secular rise in their workers' productivity (this rise in productivity being caused, in general, by better organization and a higher capital : labour ratio rather than greater intensity of effort on the part of the operatives). Subsequently the wage increases gained by employees in the high productivity growth sector spillover to the service sectors causing a large rise in their unit labour costs. Thus at macro level the percentage increment to money wages is at least
as large as the percentage increase in labour productivity in the production sector, which in turn, is substantially in excess of the percentage growth in aggregate real national income. The underlying mechanism has been confirmed both by Aubrey Jones (1972) and by other Cambridge writers. For example Turner and Jackson (1970) demonstrate that the model fits the facts about productivity increases and earnings increases in Britain. More recently Natwell, Llewellyn and Terling (1975) provided an ingenious test of the hypothesis using international data. They examined the growth in earnings and the growth in output per man in the industries within the manufacturing sector in fifteen countries over the period 1950–67. Within each country it was found that earnings increases were much more similar than labour productivity increases.

Further, the average rise in earnings in a country over the ten years approximated closely to the labour productivity increase of the three industries with the fastest growth of labour productivity rather than to the average increase in about labour productivity across all the industries. One problem with this explanation of inflation is that it does not spell out how the wage settlement gained in the high productivity growth sector also gets paid to the employees in the other sectors; we shall return to this problem below. Further, other evidence differs as to which are the leading and lagging sectors. Sargan (1971) found that the transport and scientific sectors appeared to lead the inflationary process, neither of which are production industries. Hicks-Mireaux (1971) believes that the export and import competing industries have been the wage leaders in the recent inflation as a result of their profitability caused by the 1967 devaluation of sterling. Again, neither of these latter writers discusses the process by which the wage settlements in the leading industries are transmitted nationally.
II.2 Methodological Problems

The studies discussed above have made an important start on analysing the nature of the wage inflationary process from a disaggregated viewpoint but contain an important weakness: they seldom spell out explicitly the nature of the transmission process by which wage increases in the leading sector, whether it be industry, occupation, region or local labour market get diffused to the lagging sectors, generally with only a small, or zero, modification to the percentage increase in wages received by these lagging sectors. In a nutshell the problem is: why is it that wage settlements are everywhere the same?

This problem can be analysed with the help of a structural model of the labour market. It is necessary to know what it is that influences the wage offered by the employer (the demand side of the labour market) and the wage claimed by the worker (the supply side of the labour market) and how these offers and claims get resolved into similar wage settlements.

Those who emphasise notions of equity as the underlying reason for similar wage settlements tend to place most emphasis on the supply side of the labour market. For example, "if the union-non-union wage [earnings] differential won by the unions begins to narrow (as a result of an increasing scarcity of labour in the non-union sector of the market) then the unions will make efforts to halt and if possible reverse this narrowing of the wage differential, by strike action if necessary" (Taylor 1974, p. 53). This same model is also held to apply to parity bargaining amongst different groups of workers and
within the plant. A recent study of the inflationary process in Ireland held that wage increases received by electricians, an occupation in chronic excess demand, determine macro wage movements because of "widespread acceptance of horizontal and vertical equity" (Mulvey and Trevithick 1974).

Whilst the wage offer may be determined in part by equity it seems probable that they are dominated by efficiency considerations. Lancaster (1958) and Fisher (1971), when analysing this problem theoretically show that workers will queue for entry in the leading sector which implies labour supply problems for other employers unless they match the wage increase in the leading sector; the discipline of the labour market also underlies the work of Turner et al.

In general, researchers have tended to discuss the transmission mechanism between the leading and lagging sectors in terms of wage settlements rather than by analysing claims and offers. Further, these settlements are generally alleged to result from the actions of only one party to the bargaining process, a situation which seems a priori unlikely. It is no doubt difficult to distinguish empirically between the equity based explanation of wage inflation and an explanation based on expectations of future wage increases held by employers in the lagging sectors but this is not an excuse from moving directly from the behaviour of only one of the parties in the wage setting process to an explanation of settlements. It would seem that more carefully based micro studies which emphasise the institutional procedures involved in the wage setting process (for example,
which trace through the claim-offer sequence at the firm level—such
data are seldom published except possibly in newspaper reports of
major disputes—are a necessary complement to econometric analysis
if we are to resolve the puzzle of why it is that wage settlements
tend to be similar across different groups despite their different
labour market experiences.

II.3 Implications

This research based on micro labour markets is potentially
rich in policy implications concerning collective bargaining, incomes
policies and labour market policies. Unfortunately, the potential
cannot yet be translated into practical proposals because disagreement
exists concerning both the role of leading sectors and of the dis-
persion of unemployment in the inflationary process.

It appears that national wage bargaining is partly responsible
for all regions having the same rate of earnings inflation despite
very different unemployment levels. It is possible therefore that
a move away from national wage bargaining towards plant bargaining,
favoured by many commentators on industrial relations grounds
(Donovan Report 1968) would result in a lower rate of wage inflation
because each employer will be unsure of the increases in earnings
paid by their competitors and therefore adopt a stronger stance in
bargaining whereas currently, with national bargaining, each individual
employer within an industry knows that his competitors will face similar
increase in unit labour costs. However, not too much should be made of this because in some sectors, notably engineering, plant bargaining on top of national bargaining already determines each firm's unit labour costs and in other sectors, especially the public sector, the discipline imposed by uncertainty about competitors' costs is irrelevant.

The notion of a key bargain, determining the pay increase in the leading sector and getting transmitted with minor adjustments to other sectors, is appealing. If such key bargains could be identified a pay policy which concentrates on modifying them might reduce wage inflation. The difficulty here is that there is disagreement concerning which is the key bargain (not to mention the fact that many other writers (eg. Parkin 1974) find the whole concept of a key bargain un-helpful). When examining evidence on interindustry wage linkages it was shown that high productivity growth industries, export industries, transport and science based industries have all been offered as wage leaders.

If the fast productivity growth sectors are the wage leaders it is likely that the emphasis on productivity bargaining in recent years has been inflationary. Productivity bargaining as originally envisaged in the incomes policy which started in 1965 was sensible and involved a once and for all buying out of restrictive practices at the plant level, which would improve allocative efficiency and provide gains to both workers and employers in the form of higher wages and lower costs respectively. With the passing of time the incomes policy was applied more casually and productivity bargaining came to
mean, in the production sector, linking pay increases to increases in productivity, even though the latter was determined primarily by the secularly increasing capital:labour ratio. This sequence of events is clearly documented by Clegg (1971). The implication for prices and incomes policy is that (holding their profit shares constant) high productivity growth sectors should be encouraged to reduce their prices rather than allowing their employees the lion's share of the productivity growth.

If the leading sectors are occupations in excess demand a policy which anticipated the shortage and attempted to initiate corrective measures would be helpful. Unfortunately, the evidence we have on the results of manpower planning suggests that it is very difficult to make such forecasts (past forecasts appear to have compounded rather than modified occupational shortages and surpluses) although rate of return analysis, a technique generally avoided by manpower planners, would probably produce rather better forecasts (Psacharopoulos 1973).

In addition to the lack of consensus concerning the role of key bargains in the inflation process there is also no general agreement on whether the dispersion of spatial unemployment rates and wage inflation are positively related. This is an important omission in our evaluation of regional policy. Further analyses of the dispersion of unemployment amongst properly defined local labour markets, along the lines initiated by Hackay and Hart (1974 a, b) would probably resolve this question.
III. FUNCTIONING OF THE LABOUR MARKET

Recently there has been considerable discussion over the functioning of the labour market; part of this debate evolved from the analysis of inflation. The breakdown in the unemployment-inflation trade off in the late 1960's caused much heart searching over the rise in the unemployment rate: in particular analysts differed over the weight they attached to increased voluntary unemployment in accounting for the rise in total unemployment. This controversy is examined in Section III.1. Attempts to improve the unemployment-inflation trade off or, for those who believe no such trade off exists, to reduce the natural rate of unemployment, by improving the efficiency of the operation of the labour market are examined in Section III.3. A prelude to that discussion is an analysis of gross labour market flows, which are far larger than commonly realized; some data on their magnitude is presented in Section III.2.

III.1 The Post 1966 Increase in Unemployment

The apparent breakdown in the previously believed stable trade off between inflation and unemployment resulted both in attempts to construct a more sophisticated measure of excess demand and to explain the historically high levels of unemployment.

Wage adjustment models have recently used vacancies (Bowers et al. 1970) and overtime working (Hart 1973) to represent excess demand but the most thorough new excess demand measure is that of Taylor (1974)
who added labour hoarding and hidden unemployment to registered 
unemployment to derive a composite unemployment rate. Both hoarding 
and hidden unemployment were calculated by the trends-through-peaks 
method (which has two problems -- defining the peaks and the course 
to follow when the terminal years are not peaks). Hoarding was de-
finned as potential full employment output per man minus actual output 
per man; hidden unemployment was defined as the full employment female 
activity rate less the actual female activity rate. The resulting 
proportions in "total" unemployment were: hoarding 68%, registered 
unemployment 25%, hidden unemployment 7%. Taylor argues that this 
superior excess demand measure is negatively related to wage inflation 
and therefore that the trade off continues to exist. The net result 
of these studies is that whilst some short run trade off does seem 
to exist it is weaker than had previously been thought.

A number of explanations for the higher unemployment rate of the 
last decade, as compared with the twenty years immediately following 
World War II, have been advanced recently. The explanations have 
polarised into those which emphasise supply side factors and those 
favouring demand side factors. It seems probable that, as in the case 
of the explanation of inflation, there is truth in both stories. It 
is important to know whether the supply side view is part of the ex-
planation because macroeconomic policy responds, in part, to movements 
in unemployment. To the extent that a mid 1960's unemployment level 
of 600,000 is now, because of an increase in voluntary search unemploy-
ment, equivalent to, say, 700,000, the legitimate macroeconomic
response must be modified accordingly.

The supply side view states that voluntary unemployment rose in response to the mid 1960's labour legislation. The introduction of the earnings related supplement to unemployment benefits in 1966 (equal in 1974 to one third of weekly earnings between £9 and £30) lowered the cost of unemployment. Similarly the introduction of redundancy payments in 1965 provided those who qualified for them a lump sum which could be used to sustain a longer period of unemployment. It would be surprising if this legislation did not result in more unemployment for one of its main purposes was to encourage more efficient search activity rather than have workers forced by poverty into a job which did not fit their particular skills. An increase in unemployment associated with the introduction of the earnings related supplement would tend to occur via a lengthening in the duration of unemployment rather than through a rise in voluntary quitting because the latter do not receive benefits for six weeks. (This is rather important because labour turnover was relatively high in 1966-69, possibly because job changing was a method to circumvent the prevailing incomes policy). Mackay and Reid (1972) found that, for their sample of redundant car workers, an increase of £1 in the weekly earnings related supplement was associated with an increase in the duration of unemployment of half a week -- at a time when the median unemployment duration was 8 weeks.

Some writers, e.g. Gujarati (1972), assert that all the increase in unemployment between 1966 and 1970 is due to supply side factors
(indeed Gujarati presents a simple "correction factor" to convert unemployment to its old basis). This assertion is surely too strong and has been criticized by proponents of the demand side view such as Foster (1974) and Taylor (1974).

Foster makes two main points. First, whilst he considers redundancy payments unlikely to be important in encouraging voluntary unemployment, he suggests that such payments may have reduced labour demand thereby resulting in unemployment: as workers were tolerably well compensated for the loss of 'property rights' in their jobs firms' could make redundancies with an easy conscience and less trade union opposition. There may be something in this argument but it is unlikely to be quantitatively important because the number of workers qualifying annually for redundancy payments since their inception in 1966 has averaged less than 5 per cent of the flow into unemployment. Second, and more important, Foster suggests that the bulge in the birth rate in 1946-48 resulted in a large increase in the supply of inexperienced labour some twenty years later which could not easily be assimilated into the labour force.

Taylor's hypothesis may be presented in stages: (i) in 1966 the economy experienced a large increase in both registered unemployment and labour hoarding; (ii) GNP rose in 1967 (2.8%) and 1968 (3.0%) and hoarding fell; (iii) on past experience we should have expected registered unemployment to fall (with a lag) but this did not happen, instead it remained at 2.5% and rose to 4.0% through 1971; (iv) the reason registered unemployment did not fall is that the number of workers who were shaken
out in 1966 was less than the number absorbed in the recovery; (v) this was because the recovery in output was achieved by an increase in productivity per man rather than by taking on more labour, as seen for example, by the index of weekly hours for worker (1955 = 100) which rose from 93.6 in December 1966 to 94.9 in December 1968; (vi) the switch from men to hours occurred because the ratio of the fixed costs of employment to the variable cost (wage) rose because of the introduction of industrial training board levies, SET and higher national insurance contributions.

It is unlikely that demand side factors account exclusively for the rise in unemployment. If this was the case unemployment should have fallen in the 1973 expansion back to near its pre 1966 level, substantially below 2 percent. In fact in November 1973 the unemployment rate (wholly unemployed excluding school leavers as a percentage of all employees, GB, seasonally adjusted) was 7.2 percent. We might infer therefore that both demand side and supply side factors have played a part in explaining the historically high unemployment rates prevailing in the last decade, but that the former is quantitatively more important than the latter.
III.2 Labour Market Flows

It is not generally realized just how large are the gross labour market flows in any time period. These flows have been studied a little in the U.S. (see, e.g., Holt et al. 1971) but almost completely neglected in Britain.

Consider first the flows into and out of unemployment. In a typical month between 300,000 and 400,000 adults (male plus female aged 18 and over) join the unemployment register and a closely similar number leave it. The flows onto the unemployment register comprise both voluntary separations (quits) and involuntary separations (layoffs, firings). Whilst the ratio of quits to layoffs changes over the cycle the total flow into unemployment changes relatively little; the unemployment rate rises mainly because the duration of unemployment rises.

It should be noted that the distribution of unemployment durations (and that of vacancy durations) has a long tail so that the mean duration is greater than the median. This can be inferred from the following data.

<table>
<thead>
<tr>
<th>July 1970 Unemployment duration (male plus female)</th>
<th>weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower quartile</td>
<td>2.8</td>
</tr>
<tr>
<td>Median</td>
<td>10.1</td>
</tr>
<tr>
<td>Upper quartile</td>
<td>35.5</td>
</tr>
</tbody>
</table>

Thus in 1970 half the entrants to the unemployment register left it within 10 weeks. The long tail in the distribution occurs because the probability of leaving the register decreases the longer an individual
has been on the register. This could be, for example, because the
longer a person has been unemployed the more likely he is to have ex-
hausted the local employment possibilities.

Unfortunately no comprehensive data exists which enable us to split
total separations into their voluntary and involuntary parts. Further,
whilst we have data on the flow into unemployment no published data exist
on the proportion of separations which move directly from one job to
another as compared with the proportion who experience a bout of unem-
ployment in between job changes. However, a recent estimate (Tarling
and Metcalf 1974) calculated that, for males, prior to 1966 approxi-
mately two fifths of the annual inflow of around 5 million into employee
jobs came from being unemployed, whilst since 1966 the proportion of
the (approximate) 4.5 million annual inflow to employee jobs which come
from unemployment has risen to somewhat over one half. This increase
in the proportion of job changers experiencing a bout of unemploy-
ment can be viewed as the flow equivalent of the recent rise in the
unemployment rate discussed above.

It should be noted that even though the proportion of job changers
experiencing unemployment has risen, the fact that about half the job
changes occur with no bout of unemployment in between is a point against
one of the critical assumptions of the literature on the new micro-
economics of inflation and unemployment theory (Phelps, Editor, 1970),
namely, that search is more efficient when the searcher is unemployed.
Some micro studies drawing on survey data are needed here but our evidence
accords well with that for the U.S. where Mattila (1974) reports that at least 50-60 percent of all quits move from job to job without ever experiencing unemployment.

The outflow from unemployment into employment is a function of the number of unemployed individuals and on the placement probability which in turn depends on the number of vacancies and the efficiency of search (cf Holt et al. 1971, Leicester 1973). It was estimated recently (Cripps and Tarling 1973) that, for adult males, notifications of vacancies at employment exchanges (some 2m. in 1973) comprise about 40 percent of actual recruitment and vacancies filled through the exchanges (placements) totalled some 1.2m., equal to 60 percent of notifications or a quarter of total recruitment. These ratios of placements to notifications and recruitment are very much higher than in the U.S. (cf Rees and Shultz 1970 Table 13.1). However, it is still likely that the efficiency of the employment exchanges can be improved and it is to this problem we now turn.

III.3 Lowering Unemployment at a Given Level of Demand

The recent higher unemployment rate has heightened interest in methods to reduce unemployment at a particular level of demand. Some such policies go under the title of "active manpower policy," the two main elements of which are improving the efficiency of the employment service and retraining schemes. These policies are relevant irrespective of whether or not one believes that a long run trade off between inflation
and unemployment exists. Advocates of the existence of a trade off point to manpower policy as an important mechanism to shift that trade off favourably. Those who deny the existence of a trade off but believe instead that the economy has a natural rate of unemployment consistent with any steady state inflation rate tie the determination of the natural rate to the institutional arrangements of the labour market. Whilst the latter tend to point to union restrictions, minimum wage legislation, occupational licencing and unemployment compensation as important institutional factors that influence the natural rate, they would not deny that resources should be allocated to manpower policy up to the point where that policy yields an optimal social rate of return.

It is clear from the previous section that the flows through the labour market are enormous relative to the stocks of unemployment, vacancies and employment. This suggests that the efficiency of the employment service should not be overlooked if the authorities wish to reduce the level of unemployment for a given level of demand. Under the 1973 Employment and Training Act the responsibility for the employment exchanges and the industrial training boards has passed to the newly established Manpower Services Commission.

There are a number of ways by which this Commission could effectively reduce unemployment, each of which involves either reducing the flow into unemployment or shortening the unemployment duration. First, it can raise the "quality of matches" between employees and jobs. This requires a considerable input of counselling but would reduce future
future turnover, part of which flows into unemployment, by lowering the probabilities of both quits and layoffs. Second, the search process itself can be made more efficient so that placements are made more speedily. A number of methods to speed placements have been suggested but they are not without problems. For example, the professional and executive register is computerized and some commentators believe computerization of vacancies and searchers should be extended, possibly by liaising with private employment bureaux on a fee splitting basis. It is, unfortunately, not yet clear that the type of information that the employer typically requires about an individual (motivation, discipline, physical and mental dexterity) are easily incorporated onto a computer file. A second example is self-referral, which is currently being tried on an experimental basis with encouraging results. One possible problem with this system, which by-passes the employment counsellor, is that employer's personnel costs will rise greatly because of the mass of referrals (e.g. chartered accountants wishing to become lion tamers, cf Monty Python) and therefore the employer will stop notifying the exchange of his vacancies; fortunately, there is no evidence of this happening yet. Third, if as is sometimes asserted (Bosanquet and Doeringer 1973), labour markets are "artificially" segregated by race or age or sex the MSC can try to break down this compartmentalization, thereby allowing more flexibility in its placements and lowering unemployment duration.

It is difficult to definitely advocate such policies because little
evidence exists on their social rate of return, but the following fragment of data might prove illuminating. Great concern is expressed over the strike record of British industry. In 1970 10,980,000 working days were lost by strikes (an historically high figure). Also in 1970 the number of adult men flowing onto the unemployment register was 2,972,800. If the duration of unemployment of each of these men could be reduced by 4 days (equal to 5 percent of the July 1970 median male unemployment duration of 80 days) some 11,891,200 working days would be gained. Although it is not being suggested here that a day lost through strike activity is equivalent to a day gained by reduced unemployment because, clearly, some strikes (e.g., in mining and transport) have diffuse and deep effects, the figures hint (assuming the concern about strikes is not misplaced) that an increment in the resources devoted to reducing unemployment duration for a given level of demand might have a tolerable payoff.

The second element in an active manpower policy involves training and retraining; the rationale for these programmes is that they raise employment prospects for workers who otherwise have insufficient or obsolete skills. Ziderman (1969) analysed the operation of government training centres (GTC's) which cater mainly for previously employed adults who wish to raise or change their skills. In 1970 there were 55 GTC's providing 13,000 places with a throughput of 17,000 trainees per annum. The expenditure on GTC's including capital expenditure, was £11m. in 1968, equivalent to £650 per trainee. Ziderman found a social
rate of return to their operation of 30 percent which suggests that the expansion programme initiated by the 1973 Employment and Training Act is sensible on efficiency grounds.
Those who believe that social forces are the main cause of inflation tend to favour an incomes policy as an important macro instrument. In contrast, those who see weak fiscal and monetary policy as the key to inflation tend to view incomes policy as at best irrelevant, and at worst a mirage which distracts attention from the real problem (commons expenditure committee 1974). It can be seen from the other essays in this volume that there is no agreement on the causes of inflation, so it is not clear whether an incomes policy is irrelevant or important. Nevertheless, periodic intervention in bargaining is an established part of the wage determination process so it is worthwhile to discuss, first, the problems associated with implementing an incomes policy and second, to evaluate their past success. We are concerned here only with the pay part of prices and incomes policy; further, as this essay is on inflation, although the influence of pay policy on the structure of relative wages is mentioned in the section on testing for the effectiveness of pay policy, no evaluation of the impact of pay policy on income distribution is presented (my prejudice is that a pay policy is both ineffectual and inefficient as a mechanism for altering the distribution of income in the long run).
The ground rules for implementing a pay policy, including the ubiquitous "exceptions" are discussed in Section IV.1 and the past record of pay policies is examined in Section IV.2. Indexation, the automatic linking of nominal pay movements to changes in prices, has been advanced both as a complement to and substitute for pay policy and it is therefore analysed in Section IV.3, where it is shown that the case for indexation rests on side effects which make policies to decelerate inflation more palatable and that indexation by itself will not moderate inflation.

IV.1 Establishing and Implementing a Pay Policy

The ground rules for a pay policy comprise three elements. First, a macro norm for pay rises must be established. For example, the pay policy which began a decade ago (April 1965) set a norm of 3.5 percent per annum, equal to the rise in labour productivity, and therefore, consistent both with overall price stability and constancy in the shares of national income going to pay and profits. The recent Phase III policy of 1973-74 set a norm of 10 percent per annum for pay rises. Second, the macro norm must be translated into individual micro bargains. The sensible way to do this is for everyone to have the same increase in pay, subject to certain exceptions discussed below. However, sometimes it is suggested that individuals should be awarded the average productivity increase in their own industry. A moment's reflection will show that such a policy is both inequitable and inefficient. An individual
in a high labour productivity growth sector (say manufacturing) doing an identical job to someone in a low productivity growth sector (say services) will receive an ever widening wage differential over the latter (which is inequitable); this will in turn cause the labour supply to the high productivity growth sector to rise and to the low productivity growth sector to fall, whilst the demand for labour (on certain plausible assumptions about the income elasticities of demand between the industries) is shifting in the opposite direction; therefore labour shortages occur in the low productivity growth sector and surpluses in the high productivity growth sector (which is inefficient). Clearly such a policy could not be sustained for long. Third, as it is unlikely that all negotiating parties will be keen to accept the policy, a mechanism to encourage its adoption is required. This can involve "jawboning" or adverse publicity to encourage "voluntary" adoption or alternatively the policy can be backed by legal sanctions.

Having established the rules of the game, two severe problems exist in implementing the policy. First, there is an immense number of individual bargains. Blackaby (1971), in his most useful survey on incomes policies, states "It is true that around 50 major negotiating troupes negotiate on behalf of some 7 1/2 million workers, but that is less than one third of the total in civil employment; and in any case, these negotiations serve only to a limited extent to determine the increases in actual earnings in individual plants. It is, for example, estimated that some 4 million manual workers are on payments-by-result schemes, and probably 8 or 9 million workers are employed in
undertakings where such methods are used, and are all directly or in-
directly affected by them." To the extent that key bargains exist (cf
Section II) the policy will clearly have to concentrate on modifying
them rather than wittering all the bargains.

Second, what exceptions are to be allowed for wage increases greater
than the norm? The four exceptions in the 1965-68 policy concerned labour
shortages; productivity deals; comparability (i.e. where the pay of
one group has fallen seriously out of line with its traditional place
in the wage structure); and the low paid. The recent 1972-74 policy
added payments for unsocial hours, movements towards equal pay and thresh-
hold payments (see IV.3) to this list. Exceptions present a real dilemma:
whilst the exception "gateways" in the main make economic sense (the
comparability criterion does not) the more flexible they are the more
likely it is that a particular group can use them illegitimately to
weasel through a wage increase in excess of the norm. Productivity deals
afford the best example of this problem. As originally envisaged these
involved once and for all elimination of restrictive practices under
which employees were to be rewarded because the intensity of their work
increased, perhaps because of less demarcation, or because they no longer
had a mate to carry their tools around. In the event, the high productivity
growth industries, which could afford relatively large wage increases
without unit labour costs rising, frequently masked such increases under
ostensible productivity deals, although in fact the increase in output
per man occurred not because labour was working more intensively but
rather because the capital: labour ratio was increasing. McKenzie and
Hunter (1973) state that between January 1967 and December 1969, 4091 productivity deals covering 36 percent of the country's labour force were concluded which hints that such deals were a pervasive means of circumventing the policy. Further, to the extent that such wage increases set a pattern followed by the other sectors the overall rate of wage increase tended to the rate of wage increase in the high productivity growth sectors (cf. Section II). The other exceptions present similar but somewhat less severe problems.

IV.2. Effectiveness of Pay Policies

The main function of a pay policy is to reduce the rate of wage inflation compared with what it otherwise would have been. Testing for effectiveness of a particular policy is therefore difficult because it is necessary to estimate what the increase in wages would have been had no such policy been in existence. The evidence (see especially the survey of the econometric literature by Parkin, Summer and Jones 1972) shows, consistently, that whilst pay policies moderate the rate of inflation in times of wage freeze or severe restraint, the wage inflation in the period following the lifting of a pay policy is worse than it would have been had no policy been imposed in the first place, and that the net effect on wage inflation of such policies is either zero or possibly even a higher inflation rate.

However, this evidence must be treated with caution. In the first place, the conventional approach to testing for the impact of pay policy
is to include a dummy variable (unity for policy on, zero for policy off) in a wage adjustment regression model. This approach suffers from a neglected simultaneity problem (Nash 1974). To the extent that the value of the dummy is chosen by looking at the regression residuals it is bound to show that initially the policy was associated with a deceleration of the inflation rate and that subsequently its impact lessened.

A second problem is the extreme difficulty of predicting what inflation would have been for the period after the abandonment of the pay policy, had no such policy ever been imposed. For example, assume inflation is tending to accelerate independently of whether a pay policy is periodically imposed (perhaps because the unemployment rate is persistently considerably below its natural rate); in this case, we may attribute the higher rate of inflation, once the policy is lifted, to the existence of the policy, when in fact it would have occurred anyway.

It is perhaps surprising in view of these and other statistical problems that researchers have not turned to more simple tests. The rationale for a pay policy is primarily to moderate cost push influences (to the extent that its rationale is to rupture inflationary expectations caused by demand side influences, it is unlikely to be successful unless the underlying cause of the excess demand is eliminated by fiscal or monetary policy). If cost push forces are important, *cet. par.* the industrial wage structure will tend to widen prior to a pay policy being implemented as powerful groups, already towards the top of the wage league, extract a further premium. If the wage structure
does not widen this is either because the cost push forces are not important or because the wage increases extracted in the high wage sectors spillover immediately and fully to the other industries: the evidence in Section II indicated that the spillover is neither immediate nor complete. When the pay policy is imposed a test of its immediate success in moderating cost push forces is therefore to examine the coefficient of variation of the industrial wage structure: if it becomes smaller when the policy is on than when the policy is off we may infer that, during the policy on period, cost push forces were moderated. Some evidence on the dispersion of the industrial wage structure is contained in Table 2. This shows that the initial imposition of a pay policy in the years 1949, 1961, 1966-67 and 1973 is certainly associated with a noticeable lowering in the dispersion of the industrial wage structure but subsequently that structure tends to widen as the policy is relaxed. (The same finding holds within the manufacturing industrial orders as well as overall.)

Before leaping to conclusions that pay policy successfully moderated cost push influences, at least initially, the data in Table 2 must be further examined. The dispersion in the industrial wage structure depends on factors additional to pay policy. Therefore the coefficient of variation (CV) of the industrial wage structure was regressed on the level of unemployment (U) and the rate of inflation (DP) for the 26 years 1948-73 (all data in percentages), with the following result,

\[
CV = 9.151 + 0.509U - 0.137DP \\
(3.67) (2.47)
\]

\(R^2 = 0.40\)

t statistics in brackets
Thus the industrial wage structure widens as unemployment rises and narrows when the rate of inflation is high. This hints that collective bargaining contracts impose a stickiness in wages: unionised high wage sectors do relatively well in times of high unemployment and relatively badly in times of rapid inflation. This finding is consistent with the U.S. evidence (Lewis 1963).

The impact of pay policy may be interpreted from the regression residuals. These indicate that in the pay policy years 1949, 1961, 1966-67, and 1973 the industrial wage structure has a lower coefficient of variation than that predicted from the regression equation, and conversely in the years when the pay policy is relaxed the coefficient of variation is larger than predicted. This hints that pay policy is initially successful in countering cost push forces when they exist.
TABLE 2

Dispersion of the Industrial Wage Structure

<table>
<thead>
<tr>
<th>Year</th>
<th>Coefficient of Variation</th>
<th>Year</th>
<th>Coefficient of Variation</th>
<th>Year</th>
<th>Coefficient of Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1948</td>
<td>.085</td>
<td>1957</td>
<td>.097</td>
<td>1966</td>
<td>.098</td>
</tr>
<tr>
<td>1949</td>
<td>.082</td>
<td>1958</td>
<td>.096</td>
<td>1967</td>
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<tr>
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<td>.101</td>
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<tr>
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<td>1963</td>
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<td>1955</td>
<td>.090</td>
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<tr>
<td>1956</td>
<td>.092</td>
<td>1965</td>
<td>.107</td>
<td></td>
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</tr>
</tbody>
</table>

The coefficient of variation (= standard deviation/mean) refers to average hourly earnings of full time manual men aged 21+ in October of each year. The data refer to Standard Industrial Classification industry groups as follows: 1948-1959 is from the 1948 SIC (20 industries); 1960-1968 is from the 1958 SIC (20 industries); 1969-73 is from the 1968 SIC (23 industries).

The latest narrowing in the industrial wage structure is probably attributable to the nature of the norm, which included a flat rate element (A1 + 4%) and flat rate threshold payments, both of which resulted in larger percentage rises in the earnings of the relatively low paid. An analogous fragment of evidence concerning the 1970-74 period is presented by Wilkinson (1974) who found that in the ten sectors he studied the pay of the lower paid generally rose relative to the pay of the higher paid.

This evidence prompts the question: if policies are successful in moderating inflationary forces a little when they are in operation why are they subsequently abandoned? The answer is, in part, embedded in political economy, but essentially the point is that a policy is almost certainly not sustainable in the face of excess demand. The labour market has many dimensions and it is easy to circumvent a policy by, for example, job reclassification, upgrading, loosening the piece-work structure and a reduction in normal hours; such loopholes have been discussed in detail elsewhere (Detcalf and Richardson 1971).

Thus far we have considered incomes policy only in the context of its impact on moderating inflation. However, the costs, in the form of distortions (allocative inefficiencies), imposed by the policy must be offset against any benefits in the form of a lower overall rate of inflation. These distortions include (i) the manpower needed to implement the policy and the man hours spent in circumventing it; (ii) higher labour turnover which imposes personnel and training costs; (iii) shortages in product markets in those sectors where the pay policy results in severe excess demands for labour; this tends to occur with
special severity in the public sector which, in general, is forced to accept the dictates of the pay policy: a vivid example was the deterioration in the transport, postal, gas, teaching and other local government services in London in 1973, all directly attributable to lack of recruits (despite somewhat lower hiring standards) and increased wastage which occurred because the pay policy was more stringently enforced in the public than in the private sector.

Unfortunately (and surprisingly) no estimate exists concerning the welfare loss imposed by an incomes policy. Evidence on the impact of other institutions which cause distortions in resource allocation such as unions (Rees 1963) and monopolies (Scherer 1971) hints that they are small relative to not using resources at all. Thus if a pay policy were successful in reducing unemployment for a given rate of inflation the gains from the lower unemployment would almost certainly offset the distortions caused by the policy. However, the evidence suggests that such policies have not been successful in lowering inflation permanently -- they have imposed welfare costs with few or no offsetting benefits. This is not to say that we shall never be able to design a successful policy which is economically worthwhile but rather to suggest that up to now pay policies have not been very helpful.

IV.3 Indexation

We concentrate here on indexation as it applies to the labour market which is probably the most important sector to consider when
analysing indexation, and ignore its impact on other sectors such as the bond market. A lucid exposition of the full case for indexation is presented by Friedman (1974) and a survey of the facts about indexation in Britain, for example its history, the number of workers covered, and its effect on the wage structure, is contained in Goodman and Thomson (1973).

It is agreed both by Friedman and his followers and by his critics (e.g., Rees 1970, Tobin 1972) that to end or curtail inflation it is necessary to suffer an increase in unemployment. In Friedman's long run vertical Phillips curve model the increase in unemployment would be temporary, though possibly protracted. In Tobin's multi-sector model of the inflationary process the increase in unemployment would have to be permanently higher. Monetarists who believe that there is no long run trade off between inflation and unemployment are the main proponents of indexation, but many who believe that unanticipated inflation and frustrated expectations are a problem would tend to agree that indexation has merit provided it is recognized, first, that its part in moderating inflation is rather minor, and second, if it is unaccompanied by other policies to reduce inflation then indexation will compound the rate of price rises rather than reduce it.

Indexation involves widespread use of price escalator clauses in private and public contracts; under this system wage payments and other payments such as mortgage repayments are linked to the rise in the cost of living. It must be strongly emphasised that indexation by itself will not decrease the rate if inflation: it is not a panacea for
inflation. Rather, the main case for indexation is that it makes the ending of inflation more tolerable politically because it modifies the unfortunate side effects, which in the labour market are the rise in unemployment, associated with the deceleration of inflation.

The general argument is very simple. The side effects arise because the structure of relative prices in the economy is distorted by unanticipated inflation or deflation. The distortions occur because contracting parties are mistaken in their perceptions of the likely future course of inflation. The side effects can be modified if contracts are stated in real rather than nominal terms. The way to do this is through indexation.

This general argument may be applied to the labour market as follows: the application has two interrelated strands. First, the government cuts spending and reduces inflation. With indexation employers will not face excessively high wage increases under existing contracts because their wage payments move in line with the reduced inflation and the employer therefore has less incentive to reduce the number on the payroll than he has without indexation. If no price escalators exist the employer will be stuck with higher real wages to pay than he had anticipated and will therefore cut back his employment. This argument applies with rather more force in the US where long term wage contracts are common than in Britain where the annual wage round is the rule and in addition many plant level bargains are struck.

Second, indexation reduces the lags which exist before the reduction in spending is translated to a reduction in the rate of increase of
prices. There are three lags: (i) the reduction in spending initially results in reduced output and employment and an increase in stocks; (ii) subsequently this leads to a general deceleration in the rate of wage and price increases (it has been estimated for both the US (Friedman 1974) and Britain (Economic Radicals 1974) that these lags total about two years); (iii) in time expectations about future inflation will also be revised downwards. Indexation cuts these lags. As the reduction in spending causes price rises to decelerate this immediately feeds into the wage contract causing the employer to have lower wage costs and greater incentive to maintain employment and output. It should be noted that this second strand in the argument for indexation is double edged. If fiscal, monetary or incomes policies to moderate inflation are not implemented the existence of the (Walrasian) indexation will speed the transmission of inflation and cause the inflation problem to be worse than it would be with no indexation and with the more normal (Marshallian) forward contracting.

A rather more sophisticated argument about the role of indexation in reducing inflation concerns workers' aversion to risk. Risk averse workers accept lower wages on average in occupations with a small dispersion of earnings than they require on average in occupations with larger earnings dispersion. The same argument can be applied to expectations about the future dispersion in real wages. If the rate of inflation has been very variable in the past then uncertainty prevails as to future inflation. If workers are risk averse they would be prepared to accept lower real wages in return for more information about
future inflation. This is precisely what indexation gives them: they know that their expected real wage increases will not fluctuate as a result of unanticipated inflation and are therefore prepared to moderate real wage settlements. Without indexation they required an increment in their real wage to compensate them for the uncertainty; now it is known that future price changes are irrelevant for their real welfare and they no longer require that increment.

However, this argument must be treated cautiously. Whilst it applies (assuming risk aversion) to labour in an aggregate sense it may not hold for any one group. Assume, for example, it applies to all negotiating groups except one. These groups' money wage increase claims and settlements and real wage increases will be reduced, causing a deceleration of prices. Therefore the one group which refused to moderate its real wages is better off as a result of the other groups' behavior. To the extent that each group will see this indexation would not moderate inflation on these grounds.

The threshold payments of 1974 are a good example of widespread indexation applied to the labour market. Under this scheme, initiated in the later stages of the Conservative Pay Policy in 1973, employers and workers were allowed to negotiate a wage increment of up to ¥0.4 per week for each percentage point increase in the cost of living index greater than six percent starting from a base of 100 in October 1973. The trigger was first activated in April 1974 and by October 1974 those covered were receiving ¥4.40 per week in threshold payments because the index had risen by 17 points. In October 1974 the thres-
hold system was ended and the £6.40 per week was consolidated into weekly pay. It was estimated that the threshold payments to the 10 million recipients totalled £2300m on a full year basis.

Unfortunately it is unlikely that it will ever be possible to test whether this form of indexation made the control of inflation in Britain more palatable by moderating unemployment. Unemployment rose through 1974, but unless it is possible to demonstrate that it would have increased still more without indexation it is not possible to say that the indexation was successful. A discussion of threshold agreements is contained in NMS (1974).
V. CONCLUSION

This essay has discussed some of what is known about inflation and the labour market. It is clear that despite the substantial volume of literature on this problem by labour economists and others, much of it of high quality, many important questions remain unanswered. Important unresolved issues of positive economics include (i) the extent to which the money supply validates the wage set by collective bargain- ing or itself determines that wage; (ii) whether key bargains exist, and if so whether they are the same ones each year; (iii) the extent to which the unemployment rate associated with a particular level of excess demand can be reduced by manpower policy; (iv) whether a pay policy could be devised (possibly one with a longer time horizon than past policies) which could moderate inflation and whether the resulting benefits offset the distortions such a policy would impose. This list could be greatly extended.

In view of the magnitude of the inflation problem and the multitude of unresolved issues it is strange that some protagonists hold to their chosen point of view with such fervour. When reading such crusading pieces I am frequently reminded of the quip that Lord Melbourne is reputed to have made of Macaulay that "I wish I was as cocksure about anything as Macaulay is about everything".
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