The Impact of Plant Dominance on Employer Personnel Policy and Local Labour Market Behaviour

(Volume 1 of 2 Volumes)

CAMERON IAN McPHAIL

Submitted in fulfillment of the Requirements for the Degree of Doctory of Philosophy,

Department of Social and Economic Research
University of Glasgow,

January 1982

Acknowledgements

In completing the work for this thesis I have benefited greatly from the guidance, encouragement and advice of my supervisors Alan McGregor and Bill Lever. I am also grateful to Geoff Norris and Steve Engleman for their numerous constructive comments on various aspects of the work. A number of other members of the Economics staff at Glasgow University also made helpful comments on individual sections of the thesis. Particularly deserving of mention here are Gus O'Donnell and Mark Partridge for their advice on the econometric issues relating to the analysis. A special word of thanks goes to Ken Smith and John Firn of the Scottish Development Agency whose encouragement, suggestions and assistance during the many difficult periods that beset a part-time graduate student contributed in no small measure to the completion of the work.

A very real dept of gratitude is owed to the Department of Employment and the many companies participating in the study for without their assistance it would not have been possible to generate the data set which was of fundamental importance to the work. Finally thanks should be expressed to the Scottish Development Agency for providing part of the necessary financial support for undertaking this degree.

TABLE OF CONTENTS

INDEX

Summary

The basic objective of the research project was to model and subsequently identify the impact of plant dominance on labour market behaviour. To achieve this aim the research was undertaken as two partly related but largely complementary exercises. In one exercise the investigation concentrated on examining how dominance influences labour market behaviour and personnel policy at the plant level. By contrast the second exercise was concerned with the more general topic of how plant dominance affected the performance and efficiency of its LLM environment. In support of the investigation into plant dominance the research also involved a considerable amount of preliminary work which, although not directly concerned with dominance, had to be undertaken in some depth to ensure that the empirical work was set on a sound and comprehensive statistical base.

In terms of investigating the impact of plant dominance on personnel policy the project initially developed a fairly sophisticated model of dominant plant behaviour which was based on a significantly enhanced version of standard monopsony theory. This model was then used to compare the behaviour of dominant plants with similar plants operating in separate and more competitive local labour markets. Following this, and covering a quite different aspect of dominance, a model of how dominant plants relate to other plants within the same local labour market was also developed. This was based largely on the presumption that the large absolute size of the dominant plant would differentiate it from other plants located within the local labour market. The predictions generated by both these models suggested that dominant plant behaviour would be distinguishable across a range of local labour market variables. However, given the complexity of the variables involved in the exercise and the nature of the interactions between them it was not feasible to derive a unique and all-embracing model of dominant plant behaviour.

Testing the hypotheses relating to dominant plant personnel policy was a difficult exercise which, among other things, involved empirically identifying local labour markets, analysing local labour market industrial structure and subsequently pinpointing dominant plants, and gathering detailed establishment level information on dominant plants and the appropriate control groups. Although there were many practical problems associated with each of these steps, it remained possible to overcome the principal difficulties and thereby test the predetermined hypotheses with confidence that the results would reflect with reasonable accuracy the impact of dominance on labour market behaviour. In very general terms the results of the empirical analysis were, by and large, consistent with the theoretical predictions that dominance would affect many features of an employer's labour market behaviour. Of the two separate aspects of dominance identified by the project the impact of size on plant behaviour was the most evident. The influence of monopsony on dominant plant behaviour was less profound in that although it appeared to affect most key labour market variables its importance seemed to be secondary.

As explained previously, examining the wider impact of plant dominance on local labour market behaviour was largely a separate exercise which involved constructing a quite different theoretical model and its associated dataset. That is, rather than examining the behaviour of the dominant plant group and subsequently contrasting their behaviour with other establishments, this part of the study extended the scope of the analysis by focusing on the overall performance and efficiency of dominated local labour markets, and in particular the behaviour of unemployment and vacancy rates in dominated local labour markets. Broadly speaking, the principal prediction of the local labour market based model of dominance was that plant dominance will tend to minimise the mismatch between unemployment and vacancies through its influence on the job generation process and local labour market information flows. Hence dominance should have a positive effect on local labour market performance. As well as considering how plant dominance may influence local labour market behaviour it was also possible within the same theoretical framework to suggest how other aspects of the local labour market may influence efficiency. More specifically, hypotheses were generated to suggest that local labour market size, local labour market self containment, the extent of dominance, and the nature of the dominating sector may influence local labour market efficiency.

The empirical isolation of the impact of dominance on local labour market behaviour was also a complex exercise which involved controlling for a series of variables and overcoming a variety of potentially serious econometric problems. Nonetheless, by taking care when analysing the data it was still possible to draw several meaningful conclusions from the empirical results. Perhaps the most important finding was that there was very little evidence to support the suggestion that plant dominance affected local labour market performance. However, and by way of contrast, the available evidence did indicate that industrial dominance positively affected local labour market performance. Related to this another finding was that, on the basis of available evidence, it seemed that the type of dominating industry also influenced performance.

Drawing together the empirical findings seems to suggest that occupying a leading position in the local labour market does not appear to significantly disadvantage the dominant plant. This result holds even although there is ample evidence to suggest that dominant plant personnel policy differs in many respects from other plants and the cause of these differences may be traced back to the plant's position in the local labour market. Related to this and of equal importance it seems that in overall terms dominant plant employees are not adversely affected by the quasi-monopsonistic position of their employer. More specifically, although where some features of benefit package are concerned dominant plant workers appear to be worse off than comparable non-dominant plants, these negative aspects tend to be offset by several potentially important advantages associated with working in a dominant plant. Most of these plant level observations are also consistent with the more aggregated local labour market result that plant dominance does not seem to affect the underlying efficiency of the local labour market as measured by the mismatch between the local unemployed and the local vacancies.

LIST OF TABLES

VOLUME 1

List of Tables (continued)........

List of Tables (continued)........

List of Tables (continued)........

List of Tables (continued)........

List of Tables (continued)........

List of Tables (continued)........

List of Tables (continued)........

List of Tables (continued)........

List of Tables (continued)........

CHAPTER 1

RESEARCH OBJECTIVES AND A SUMMARY OF PRINCIPAL RESULTS

1 GENERAL AIMS AND CONSTRAINTS

The topic, and to some degree the methodology adopted by the thesis originated in the SSRC sponsored project, "The Dominant Industrial Plant and Urban Development". The underlying purpose of the parent project was to examine the many different aspects associated with the working of British local labour markets (LLMs) which were identified as having employment structures dominated by a single non-tertiary employer, and to compare these labour markets with those which were not so dominated. In particular, the parent project set out to examine the fluctuations in economic welfare in dominated LLMs, and the operation of local income and employment multipliers generated by the dominant plant.

Within this broad subject area this part of the research focuses specifically on the labour market behaviour of dominant or quasi-monopsonistic plants, both in the terms of the impact of dominance on their personnel policies and on the relationship of these plants to their LLM. Suprisingly, although dominance is a fairly common labour market phenomenon, it remains an underdeveloped topic in applied labour market research. To some extent this reflects the lack of an adequately developed theoretical underpinning upon which to base empirical analysis which in turn is partly attributable to the complexity of the topic. The absence of previous work in the area also reflects the lack of a suitable data set upon which to base empirical analysis and hypothesis testing. This study attempts to overcome both these shortcomings: firstly by developing a theoretical model of dominant plant and dominated LLM behaviour, and secondly by building a sufficiently comprehensive data base to test whether the predictions of the model can be sustained empirically.

In very general terms the first major hypothesis tested by the research is that dominant plant personnel policy differs in many important respects from the approaches adopted by other employers. In most cases these differences in personnel policy may be attributed to two largely separate structural features associated with dominance. The first feature is that dominant plants tend to be influenced by monopsonistic pressures since they employ a significant portion of the LLM's workforce. The second feature relates to the large absolute size of dominant plants as measured by the number of workers employed by the plant. The implications of the monopsony and size effects for dominant plant personnel policy are quite different and in the research care is taken to distinguish between the two by analysing them separately where this is possible.

The second major hypothesis tested in the research is that dominance not only affects plant personnel policy but it also influences the overall performance and efficiency of the LLM. This hypothesis relates mainly to monopsonistic influences and the extent to which dominance influences LLM institutions and information systems with the labour market. Other factors besides dominance also have an impact on LLM efficiency and therefore in order to isolate the impact these other considerations they are examined in parallel in the research.

2 METHODOLOGICAL APPROACH

Although both the central research hypotheses appear to be relatively straghtforward, isolating the effect of monopsony and size on plant and LLM behaviour is a difficult empirical exercise. Labour market analysis, particularly at the plant level, is in the difficult position of spanning a range of social science disciplines and this can present considerable analytical and practical difficulties for researchers. That is, labour market behaviour is moulded by so many diverse influences, most of which are difficult to isolate and quantify, that constructing a realistic and yet sufficiently general model is an extremely difficult and often subjective exercise. Moreover, since many of these variables are closely interlinked it is extremely difficult to identify an unambigious causal sequence which will translate a description of plant and LLM behaviour into an explanation of the factors under observation. As a result of these considerations labour market analysis has been the scene of considerable debate over what constitutes the most appropriate philosophical and methodological approach to the subject. Basically the conflict may be split into two separate schools of thought; the traditional economic approach and the institutionalist approach.(1)

The proponents of the traditional economic approach believe that LLM behaviour may be explained largely in terms of economic forces since these are seen to be of fundamental importance and overshadow any other process in the market. Accordingly, when confronted with data on labour market behaviour, orthodox economists analyse the problem using the standard tools of demand and supply, equilibrium, or maximisation under defined constraints. The traditional economic approach, therefore, simplifies the problems of LLM analysis by concentrating on the economic determinants of behaviour. Non-economic forces are generally dismissed as abberations, only slightly distorting the more powerful economic influences. Orthodox economists believe that to include other influences adds little to the explanatory power of the theory but, on the other hand, would greatly increase its complexity. As a result there would be no manageable theoretical framework to help understand LLM behaviour and to predict LLM performance. (2)

The inst tional approach stands in marked contrast to the economic school by arguing that major shortcomings in the traditional economic paradigm have been highlighted by empirical investigations which, for the institutionalists, unequivocally

---

(1) For a review of the principal arguments involved here read Gordon (1972), Corina (1972), and Thurow (1976)

(2) Note that some of the more modern economic analysis also take account of information weaknesses and other market inperfections. For example, see Lipman & McCall (1976)

illustrates that many theoretical predictions of the orthodox model do not accord with reality. As a result the institutionalists conclude that, in its simplicity, the economic model neglects several important determinants of, and constraints upon, labour market behaviour. Consequently, the institutionalists consider that the economically based assumptions underlying traditional theory are unrealistic and therefore it is unlikely that the predictions of the orthodox approach will be reliable. In place of the supposedly misspecified and inadequate model the institutionalists suggest that a wider interpretation of the problem is necessary; one which cannot be encompassed by the narrow parameters defined by the demand and supply approach. As part of the wider approach the institutionalists believe that the labour market should be viewed as an interrelated interdisciplinery system composed of institutional, sociological, psychological and economic forces which combine to produce results far removed from the economically based predictions. The main advantage of this approach, according to its advocates, is that it 'explains' more about labour market behaviour than the economic approach. By taking important non-economic forces into account it becomes a closer approximation to reality.

For the purposes of the study, and bearing in mind the strengths and weaknesses associated with each viewpoint, the methodological approach adopted by the more orthodox economists is accepted as the most realistic and practical analytical tool. Indeed it can be argued that the shortcomings of the economic approach, and in particular its reported predictive failure, stem from the exclusion of the important economic variables rather than the neglect of totally different institutional and sociological forces. The simple economic model criticised by the institutionalists can be viewed as only the foundation of a more complete and realistic economic interpretation of labour market behaviour. Once these additional economic forces are included the economic approach should conform more closely with the empirical realities of LLM behaviour. (3)

---

(3) See Lipman & McCall (1976) for examples of this.

Consequently in the following survey of LLM behaviour, economic variables and economic pressures are taken to be the key determinants of dominant plant personnel policy and dominated labour market behaviour.

Turning to a different but nonetheless related consideration, it should be emphasised that although the model of dominant plant and dominated LLM behaviour developed in the research is credible and consistent it is not possible to develop a model incorporating highly specific predictions. This reflects the underlying complexity of the LLM environment and the close interrelationships between many of the key labour market variables under examination. As a result, and when dealing with the more problematic labour market variables, the theoretical framework developed in the study has to be couched in relatively general terms to allow for alternative but equally plausible interpretations. That is, given the nature of the labour market it is extremely unlikely that a unique model of dominant plant and dominated LLM behaviour exists. A more realistic approach is therefore to build some flexibility into the theory which if necessary can be refined in the light of empirical considerations.

Accepting the methodological approach favoured by economists, but at the same time recognising the dangers and limitations imposed on the study by the nature of the research, the theoretical and empirical work on dominance is divided into four sections. Firstly, the study identifies UK LLMs and their industrial structure, and thereby isolates those LLMs defined as plant dominated. Secondly, the behaviour of dominant plants in relation to otherwise similar plants operating in non-dominated LLMs is investigated. Thirdly, the behaviour of dominant plants in relation to other plants within the same LLM is examined. Finally, the study analyses the underlying efficiency and principal behavioural characteristics of dominated as opposed to non-dominated LLMs. The principal results to emerge from each of these four sections are summarised very briefly below.

3 THE IDENTIFICATION OF LLMS AND THEIR INDUSTRIAL STRUCTURE

This section forms the starting point for much of the subsequent analysis of dominant plant behaviour in that the calculations form the basis and framework for a detailed examination of the impact of dominance on both plant behaviour and LLM efficiency. In the UK the identification and classification of LLMs has not previously been attempted on such a comprehensive scale. Consequently, isolating the LLMs involved working from a set of theoretical propositions and definitions through to a series of operational criteria which were then used to identify and subsequently categorise LLMs.

With respect to the definition of LLMs a geographical area had to fulfil two basic considerations before being considered as a LLM: firstly, the area had to be relatively small so that the workforce could travel easily throughout; and secondly, (in order to constitute a unified market) the area had to be relatively self-contained in terms of journey-to-work patterns. Although both these conditions are not difficult to understand, operationalising the concepts was a difficult exercise since there are no arguments to support a particular size of geographical area, a particular level of self-containment, or any combination of the two, as representing an obvious threshold for defining a LLM. Consequently, and in the absence of any such index, it was decided to set arbitrary cut-off points based largely on pragmatic considerations (see Appendix 1). Accordingly, to qualify as a LLM an area had to meet the following conditions :

-at least 70% of the resident workforce had to be employed within the LLM area;

-at least 70% of the area's workforce had to reside within the LLM area;

-the area had to contain at least 10,000 inhabitants in urban areas;

-the area had not to exceed 50,000 acres, and finally

-the population density had to exceed one person per acre.

Using these criteria and the 1961 Journey to Work statistics 299 LLMs were identified. The distribution and principal characteristics of the selected LLMs are shown in Appendix 2.

Having isolated the LLMs the next step was to identify and classify the industrial structure of the individual markets, and in particular to distinguish between dominant and non-dominant areas. This was achieved using Factory Inspectorate figures and ER II data supplied by the Department of Employment which was aggregated to match the predefined LLM boundaries. Using this data the project initially attempted to draw a distinction between LLMs where there was a normal or rank -size distribution, and other areas where the distribution was of a primate form. In practice, however, there was no such distinction and, in the absence of any alternative, dominance was defined statistically. On the basis of pragmatic considerations the dominance threshold value was set that dominant plants should employ more than 12.5% of the workforce in the area. Given that approximately 50% of employment is in services this in practice means that a dominant plant will account for at least 25% of manufacturing employment in an area, and therefore should have a major impact on LLM behaviour.

Using this definition of dominance 95 plant-dominated LLMs were identified, and with 3 of these LLMs being dominated by two separate employers, this gave a total of 98 plants as a basis for further investigation. In terms of workers these 98 plants employed 570,000. The largest plant employed 25,000 with the average number of employees being just below 6000. Only 6 plants employed less than 1000 workers. The distribution of dominant plants was reasonably widely spread between the Regions, but there was a relatively high proportion located in the more depressed areas. (4)

---

(4) Much of the information on the identification and classification of LLMs is very detailed, and at the same time is only indirectly related to the focus of the research in that it merely provides the geographical basis for testing hypotheses on the impact of plant dominance. Consequently, the detailed outline of the methodology and workings behind defining LLMs and the identification of plant dominance have been placed in Appendices rather than included in the main text. Furthermore, since most of the work was undertaken for the project as a whole, rather than merely in relation to the labour market implications of dominance to include this as totally original work would have been misleading.

4 THE BEHAVIOUR OF DOMINANT PLANTS IN RELATION TO SIMILAR NON - DOMINANT PLANTS

One of the central themes of the study is that dominant plants behave differently from similar but non-dominant plants operating in more competitive LLMs. The prime reason put forward for these behavioural differences is the impact monopsonostic influences have on the dominant plant. The theory behind this proposition, and therefore the nature of the characteristic attitudes adopted by dominant plants in their personnel policies is developed in Chapter 2. The chapter begins with a detailed presentation of the standard monopsony model. However, since the model has a number of shortcomings for any practical analysis of dominant plant personnel policy an enhanced monopsony model is developed incorporating factors previously excluded from the more abstract standard treatment. From this model a series of hypotheses are developed which form the basis of the subsequent empirical investigation into the impact of dominance.

As mentioned previously it is difficult to generate a series of precise and unambiguous hypotheses when analysing dominance. Nonetheless, and bearing this consideration in mind, it is still possible to develop the following propositions on the basis of the detailed review of monopsony theory: [5]

- Dominant plants will tend to offer a level of wages below that prevailing in otherwise similar plants operating in more competitive LLMs.

- Dominant plants will experience labour shortages when offering their 'equilibrium' level of wages.

---

5) Note that the hypotheses listed here are stated at their most simplistic form and a much more detailed presentation is given in Chapter 2. In particular, this chapter recognises that the interrelationships between variables may ultimately condition some of the hypotheses usually associated with monopsony theory.

- Dominant plants will adopt characteristic recruitment policies to overcome the problem of supply inelasticities created by monopsony.

- The level of unionisation in dominant plants will be enhanced by monopsonistic conditions.

- Monopsonistic pressures will lead to relatively high levels of training in dominant plants.

- The level of quits will be lower in dominant plants than in otherwise similar plants operating in a competitive environment.

Data to test the hypotheses relating to dominance was generated from questionnaires returned from the previously identified dominant plants and a carefully selected control group of similar plants operating in more competitive LLMs (see Appendix 3 and several later Appendices).[6] Where possible the questionnaire results were supplemented by previously completed research into associated labour market issues. The principal results emerging from the analysis of the questionnaire returns are set out in detail in Chapter 3 and tend to support many, but not necessarily all, of the theoretical predictions associated with the monopsonistic interpretation of dominant plant behaviour. However, by way of setting the scene, the principal results are summarised below.

The first hypothesis to be tested was that dominant plants tend to offer a level of wages below that prevailing in otherwise similar plants operating in competitive LLMs. In general this hypothesis was supported by quantitative and qualitative evidence although problems with the data set casts some doubt on the true nature of the differences. The possible impact of monopsony on wages and earnings was also examined by comparing the determinants of wages in the two sample groups and it was found that influences consistent with monopsony generally seemed to be more important in the dominant plant sample although the evidence on this was limited.

(6) It was again felt that the detailed discussion of the survey methods and the statistical technique employed should not be included in the main text and therefore the results are presented in Appendix 3.

Monopsony theory also suggests that dominant plants tend to suffer from labour shortages whilst at the same time offering an equilibrium market wage rate. The empirical evidence on this only partly supports this proposition. That is, although many dominant plants suffer from labour shortages, particularly for skilled workers, the position is worse in the control group sample. Nonetheless, looking in more detail at the causes of labour shortages it would appear that monopsonistic pressures are more important, although not significantly so, in the dominant plant sample. A number of possible explanations may be put forward to explain why dominant plants do not appear to suffer disportionately from labour shortages ranging from variations in the level of unemployment in the LLM to the dominant plant's ability to cope more readily with labour shortages through their recruitment policies and screening techniques. Unfortunately, without more detailed information on the nature and cause of labour shortages it is difficult to specify precisely the role of monopsony in influencing labour supply within the LLM.

As predicted, plant recruitment also appears to be influenced by monopsonistic considerations, although this is only apparent in the secondary and less important recruiting methods adopted by employers which tend to be used mainly when LLM conditions tighten. That is, under normal LLM conditions dominant plants tend to behave like other plants by relying primarily on relatively inexpensive and passive recruitment channels. It is only when the particular characteristics of dominated LLMs become more important that management appear to respond by adopting specialist recruitment policies to overcome the monopsonistically induced supply inelasticities. This appears to be especially true for the high skilled groups where supply inelasticities seem to be more prevalent.

Dominant plant training is another aspect of personnel policy theoretically subject to monopsonistic pressures due to the partial loss of the distinction between general and specific training and the tendency towards low quit rates in this particular market structure. Without detailed data on training it is difficult to empirically test this hypothesis, nonetheless the available quantitative and qualitative information from the questionnaires would seem to be consistent with the hypothesis and support the view that dominant plants train more, both in total and on a per-capita basis, than equivalent plants operating in a more competitive environment.

The structural characteristics associated with dominated LLM also appear to influence the level of unionisation in dominant plants as theory suggests. More specifically the questionnaire evidence shows that levels of unionisation for males are significantly higher in the dominant plant sample, and this is not explained by any obvious sampling bias.

Finally, the relationship between dominance and quits was examined and in this case the relatively general evidence on the relationship was inconclusive. Although quits were marginally lower in the dominant plant sample, and therefore the results seem to support the original hypothesis, the individual differences were statistically insignificant. In part this reflects the concentration of high quit rate industries in the dominant plant sample, and when the bias is corrected the expected difference between the control group and dominant sample becomes more pronounced supporting the original hypothesis.

In overall terms, and considering dominant plant personnel policy as an interrelated system rather than as separate components, it does appear that monopsony has a widespread, if not profound, influence on dominant plant personnel policy. In fact, it seems that monopsonistic influences in one area of dominant plant personnel policy do tend to influence other aspects of personnel policy. As a result of these influences, and although precise measurement is not possible, the total impact of monopsony on dominant plant appears to be significant in that their overall behavioural characteristics are different from similar plants operating in a more competitive labour market environment.

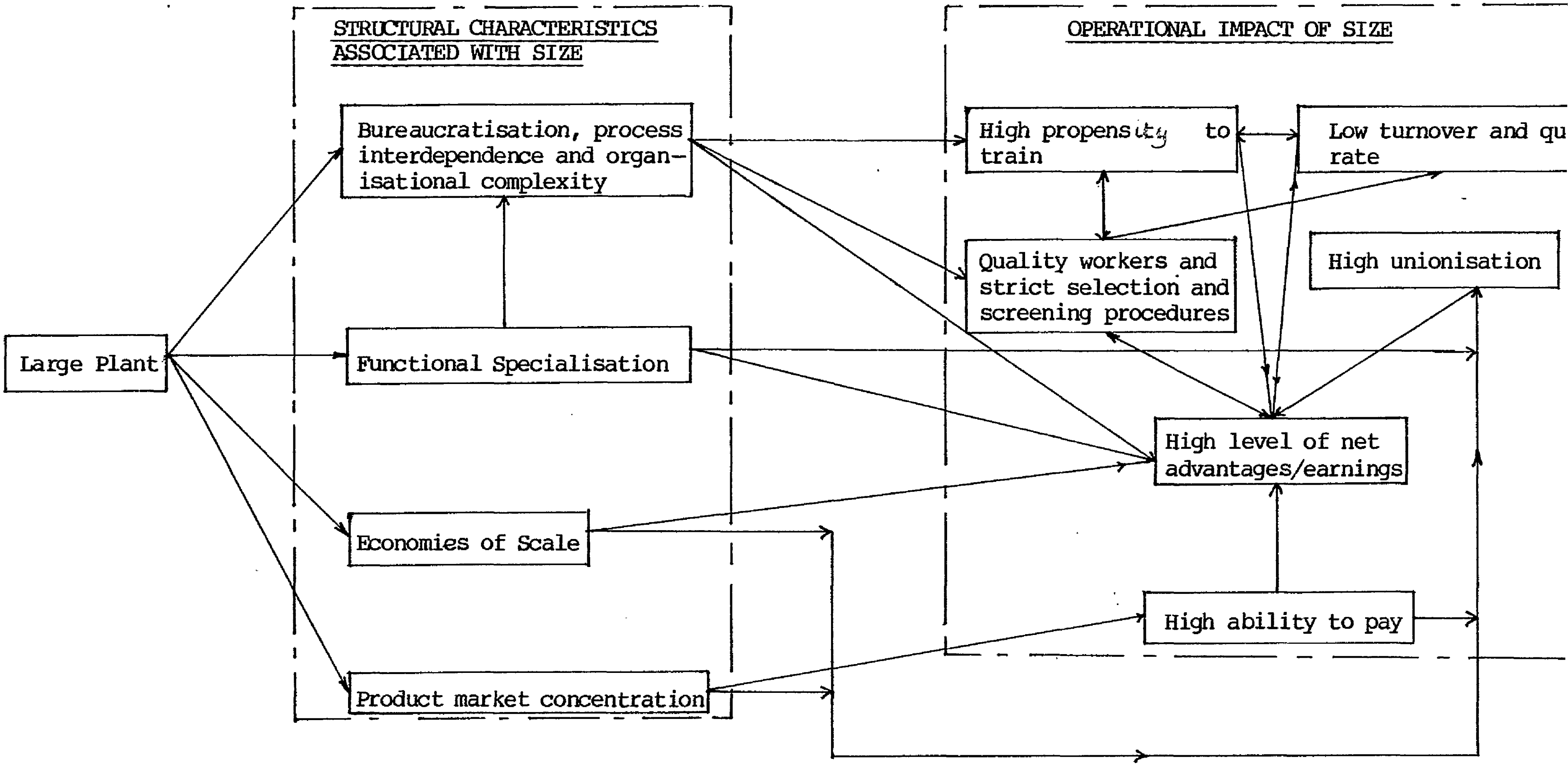
5 THE BEHAVIOUR OF DOMINANT PLANTS IN RELATION TO SMALLER PLANTS OPERATING WITHIN THE SAME LLM

The impact of dominance on plant personnel policy may not be fully reflected in the monopsonistic framework developed previously since the model largely ignores the influence which other firms operating in the same LLM may have on dominant plant behaviour. As a result it is important to examine how the dominant plant relates to other establishments operating within the LLM, and on this basis explore how these relationships condition and qualify the monopsonistically based predictions. That is, as dominant plants are not true monopsonists it is only when interactions between these and other plants in the area are taken into account that it is then possible to establish the overall impact and influence of dominance on plant personnel policy.

As Chapter 4 in the research explains the labour market behaviour of dominant plants tends to differ radically from other plants operating within the same LLM. The most important differentiating feature of dominant plant intra-LLM behaviour is the large absolute size of these establishments relative to other plants within the area. The impact of the size effect on dominant plant personnel policy is important since within the plant it conditions levels of job satisfaction and attitudes to work, industrial relations and workforce cohesion, and hence ultimately many fundamental aspects of the economics of plant manpower and personnel policy management.

The full impact of plant size on personnel policy is summarised in Diagram 1.1. As the diagram shows there are essentially four structural characteristics associated with plant size: bureaucratisation and organisational complexity, functional specialisation, product market concentration, and economies of scale. Each of these effects is of fundamental importance to personnel policy as they ultimately influence the operational effects of size either jointly or in isolation as is again shown in the diagram.

DIAGRAM 1.1 THE DETERMINANTS OF LARGE PLANT PERSONNEL POLICY



On the basis of the model of the size effect it is possible to develop a series of predictions on how the dominant plant will relate to other plants within the same LLM. At their most simplistic level these hypotheses are as follows :

- The dominant plant, because of its size, will offer a higher level of earnings than the other smaller plants operating within the same LLM.

- The dominant plant, because of its size, will recruit high quality workers.

- As a result of wishing to employ high quality workers the dominant plant will adopt characteristic recruitment methods which will also include a relatively strict screening process.

- Dominant plants will tend to offer above average levels of training.

- Dominant plants will display relatively high levels of unionisation.

The empirical approach to identify how size influences dominant plant behaviour is basically similar to the approach adopted when making inter-LLM comparisons of plant behaviour, in that much of the required data was collected from the questionnaires sent to the dominant plants. However, in this case a control group was not generated by sending the questionnaire to other plants operating in the same LLM. This decision/........

This decision was prompted by the inherently poor response rate to questionnaires characteristic of small plants. As an alternative means of comparison it was decided to include in the schedules sent to dominant plants direct questions on their relationship to other plants operating in the same LLM. As a further back-up results of previous studies into small plant behaviour were used to test the general hypothesis that there were considerable differences between the behaviour of the dominant plant and other manufacturing units in the area. In general terms the evidence collected suggests that within the LLM dominant plants seem to exhibit characteristic behaviour patterns which are in fact consistent with the hypotheses relating to the size effect. Moreover, when these are considered together they produce an economically consistent and rational explanation of dominant plant attitudes and behaviour.

One of the most important results of the analysis shows that dominant plant wages and earnings are generally higher than other plants in the LLM. From the available data this appears to be a strategy deliberatdy promoted and maintained by dominant plant management. The questionnaire results and other considerations also suggest that the high wage policy was the result of the structural characteristics associated with plant size.

The high wage strategy of dominant plants also appears to have direct implications for other aspects of personnel policy. In particular, the questionnaire evidence suggests that as a result of their high wage policy dominant plants are able to recruit and retain workers of above average quality. The dominant plants also appear to recruit workers of a higher skill level. Both these conclusions support the theoretical predictions developed previously.

The above average earnings package and the high quality and skill requirements also appear to influence dominant plant recruitment methods as suggested by the 'size effect' model. In most cases it appears that there is a well organised list of applicants willing to work in dominant plants. From this queue dominant plants are subsequently able to select the most promising recruits through a series of screening processes. Unfortunately, it was not possible to conclude whether these selection procedures were any stricter than other plants operating in the LLM as the model developed in Chapter 3 suggests.

Dominant plant training policies also appear to differ from other LLM plants, with the dominant plants generally providing a relatively high level of training. This supports the argument about the considerable economies of scale available to dominant plants on training and the need for dominant plants to maintain the quality and skill of their labour force. The high level of training provided by dominant plant s is probably also influenced by the dominant plants relatively high wage rates, in that dominant plants can be confident that trained workers will generally be unable to quit and move to plants offering superior earnings.

Finally, the levels of unionisation in dominant plants appeared to be higher than in other plants in the LLM. This again appears to reflect the structural characteristics associated with the plant size and is in line with the theoretical predictions relating to this variable. The high levels of unionisation, in turn, appear to influence other aspects of dominant plant personnel policy including the nature of collective bargaining, and the level of earnings and fringe benefits.

In a more general sense the model of dominant plant intra-LLM behaviour tends to support a somewhat modified but nonetheless basically competitive explanation of labour market behaviour. Each policy or reaction adopted by the dominant plants has a valid economic interpretation based on the plant's interrelated and often complex requirements to operate efficiently. That is, the dominant plants are reacting to the conditions imposed by their relatively large absolute size in an economically efficient manner. Therefore, the behaviour of wages, earnings, manpower quality, selection procedures, unionisation and training programmes, all reflect the pressures imposed by plant size.

Finally, but nonetheless of considerable importance, it seems that the relationship between the dominant plant and the other plants in the LLM may well have important implications for the monopsony model. In particular, the position of the dominant plant as the LLM wage leader may serve to reduce the depressing impact of monopsony on dominant plant wages. The leading position of the dominant plants in the LLM wage hierarchy may also help to overcome the shortage problem associated with monopsony, which in turn should preempt the need for dominant plants to use recruitment methods specifically designed to overcome supply inelasticities. Having said this perhaps it is ample testament to the importance of monopsony that, despite the implications of the plant size for dominant plant behaviour, the influence of supply inelasticities still appear to affect dominant plant behaviour.

6 The Efficiency of Dominated LLMs

The second major section of the research into dominance is concerned with the impact this feature of the local economy may have on the underlying efficiency of the LLM, as measured by local unemployment and vacancy rates. This part of the research, therefore, approaches the topic of dominance from a much wider perspective in that it is concerned with the behaviour of the entire labour market rather than one particular plant. The theoretical justification for the view that dominance may affect LLM performance is presented in Chapter 6 which initially investigates possible measures of LLM efficiency based on UV data and subsequently goes on to explore how dominance and other LLM characteristics may influence aggregate LLM behaviour. The empirical results of the UV analysis are presented in Chapter 7 with supportive material contained in Appendices 13 to 17. The major theoretical conclusions developed in Chapter 6, couched in their simplest form, are as follows:-

- LLM UV curves can be modelled using the standard UV equation $U=aV^B$

- The efficiency of a LLM is measured by the point where the UV function crosses the U=V line, but as a back up measure it is also possible to use the UV function's elasticity which is the value B.

- The structure of unemployment and vacancies in plant and industry dominated LLM's will tend to reduce the coexistence of unemployment and vacancies and therefore will improve LLM efficiency.

- The nature of information flows in plant and industry dominated LLM's will tend to improve LLM efficiency.

- The efficiency of a LLM as measured by the UV curve, is likely to be inversely related to its size.

- The level of self-containment in a LLM is likely to influence the position of the UV curve and hence LLM efficiency.

- The nature of the dominating sector will tend to influence the efficiency of the LLM, and more specifically it is likely that stable industries will be the most efficient whereas rapidly expanding or declining industries will tend to be the least efficient.

To test the hypotheses relating dominance to LLM efficiency involved collecting a suitably comprehensive and accurate data base on unemployment, vacancy and employment figures. To ensure that each LLM UV curve was estimated accurately it was decided to collect 100 quarterly observations for each variable covering the period 1951 - 1975. In some cases the data was not available, but despite this there were generally sufficient observations to calculate a UV equation for most LLMs. Although in general data availability was not a problem it was recognised that the accuracy of the data was questionable and this could lead to interpretative problems unless handled with care (see Appendix 13). Indeed, even by introducing sophisticated controls it is unlikely that all the shortcomings associated with the data could be overcome and, as a result, any conclusions drawn on the basis of the empirical results will be subject to qualification.

Related to the data set another important issue facing the UV analysis concerned the adoption of the most suitable econometric approach. Failure to use the most appropriate method would once again generate potentially misleading conclusions based on the misinterpretation of the available statistics. Given the data set under examination, and remembering the hypotheses under test, the most econometrically correct analytical method would be to use ordinary least squares (see Appendix 15). Unfortunately, however, and for several substantive reasons it was not practical to use this technique and as an alternative it was decided to run the standard UV equation on a LIM basis. More precisely this involved estimating the equation Log U = Log A + BLog V for each individual LIM data set. Having calculated the measures of LIM efficiency from each equation it is then possible to test the hypotheses on dominance by relating these results to the characteristics of the LIM. It should be borne in mind, however, that although this approach appears to be relatively straight-forward it is subject to several important econometric shortcomings. As a result of this largely unavoidable problem the analysis of the UV data is restricted to suggesting what the results may imply rather than deriving any more positive conclusions.

In terms of the actual results of the UV analysis one of the most important findings was that, as predicted, the efficiency of industrially dominated LIM's was much higher than non-dominated LIM's. However, and contrary to expectations, there was no meaningful difference in efficiency between plant dominated and non-dominated LIMs. By and large this pattern still prevailed when different controls were introduced into the calculations. In terms of the original hypothesis, therefore, it seems as if the available evidence only in part supports the more general proposition that dominated LIMs will be more efficient than non-dominated areas.

The analysis of the UV equation results also indicated that there was no obvious relationship between LLM size and LLM efficiency, or LLM self-containment and LLM efficiency. Given the nature of the data set and the perhaps rather tenuous nature of the hypotheses these results were not particularly surprising. On the other hand there did appear to be a marked relationship between both measures of LLM efficiency and industrial sector. Indeed, the results were broadly consistent with the original hypothesis that stable industries would be characterised by the highest level of LLM efficiency and growing and declining sectors would be associated with less efficient UV curves.

7 Overall Conclusions and Implications

In general terms the fundamental objective of the research was to identify the nature and extent of any possible impact dominance may have on labour market behaviour. Unfortunately, this relatively straightforward hypothesis was not quite as simple to test as it first appeared. One fundamental difficulty was that there was no readily adoptable theoretical framework upon which to base testable hypotheses, and therefore for the most part the research was forced to develop its own model of dominance. Reinforcing this, the task of developing theory was made particularly difficult because the project chose to investigate dominance on two levels : firstly, in relation to how it influenced plant behaviour and secondly, how it influenced local labour market behaviour. In addition to these points a further problem which had to be overcome was that when developing these two relatively independent models the researcher was confronted with a wide range of interrelated labour market variables each of which may be associated with dominance in a number of ways. A final, but nonetheless substantial, difficulty was that for the most part it was necessary to generate, often from scratch, a data base in a form appropriate to test the hypotheses relating to dominance. This was an extremely tedious and time consuming exercise which, even when every care is taken to ensure the validity of the figures, cannot realistically be expected to produce a totally satisfactory set of statistics.

Despite these problems however, it was still possible to develop two overlapping, reasonably coherent and relatively general models to explain how dominance may affect plant and LLM behaviour. In testing the hypotheses generated by the process it seemed that, in broad terms, dominance did in fact influence labour market behaviour. The evidence for this was most clearly demonstrated at plant level where many of the original hypotheses were supported by empirical evidence. Nonetheless, although the impact of dominance on plant behaviour is evident, it appeared to be of secondary importance and its influence should not be exaggerated. At a LLM level the impact of plant dominance is not particularly observable despite being much in evidence in industry dominated areas.

As a final conclusion to the exercise it does seem worthwhile making the relatively general point that the available evidence does not suggest that plant dominance has a significant adverse affect on the economic well being of the LLM or the plant's workforce. More precisely, whilst it is certainly true that dominant plants seem to pay relatively low wages when compared to other plants operating in more competitive LLM's, this is in many respects offset by other more positive considerations such as the dominant plants training activities. Of course, given the dominant plant's quasi - monopsonistic position in the LLM this relatively neutral conclusion would not hold if such a plant was forced into major cut backs or indeed closure. Under these circumstances the effects on the local economy would be profoundly negative, but this is a rather different topic from the one under review and deserves separate investigation. As a final point it should also be said that from the employer's point of view there does not seem to be any serious disadvantages associated with occupying a position of dominance in the LLM.

CHAPTER TWO

A THEORETICAL MODEL OF THE IMPACT OF MONOPSONY ON DOMINANT PLANT PERSONNEL POLICY

The distinguishing characteristic of dominant plants is that they employ a relatively high proportion of manufacturing employment in a LIM, and hence occupy a quasi-monopsonistic position in the labour market. This Chapter seeks to establish from a theoretical standpoint how these monopsonistic pressures influence dominant plant personnel policy. The Chapter begins by presenting the standard model of monopsony focussing in particular on the theory's underlying assumptions and principal predictions. On the basis of the standard exposition an augmented monopsony model is developed incorporating factors previously ignored in most models. The operational implications of the augmented model are subsequently set out as hypotheses which may be tested by contrasting dominant plant personnel policy with similar non-dominant plants operating in more competitive labour markets. The hypotheses are devised bearing in mind that whilst monopsony theory relates to a single employer LIM dominance implies that, although one plant constitutes a high proportion of the market's labour supply, other smaller establishments operate in the area. (1)

1. THE BASIC MONOPSONY MODEL

When analysing dominant plant behaviour in relation to similar plants operating in a competitive environment the natural reference point is monopsony theory and the traditional labour market approach to the problem. Using the basic monopsony model it is possible to

(1) The nature of dominance is discussed in depth in Section 6 of this Chapter and Appendix 2.

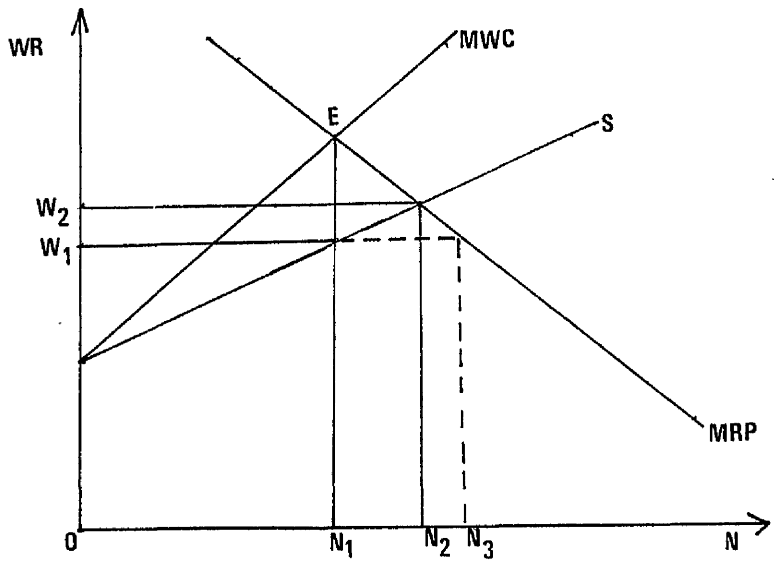
identify, at a conceptual level, the most important influences labour markets dominance has on dominant plant personnel policy. However, this standard exposition, due to its many simplifying assumptions, only offers a starting point for any practical analysis of dominant plant labour market behaviour. A more realistic interpretation of dominant plant attitude and policies requires additional development and further refinement of the standard treatment as is shown below.

The standard monopsony model is based on the following simplifying assumptions (see Rees, 1973, PP 75-80; and Hunter and Robertson, 1969, PP 239-241):

(i) There is perfect information in the LLM available at zero cost,
(ii) Workers have equal productivity,
(iii) There is full-employment,
(iv) There is only one occupation within the plant,
(v) The operation of the LLM is not influenced by non-economic factors, either social or institutional,
(vi) There is only one employer in the LLM and,
(vii) Employers are profit maximisers

Using these simplifying assumptions a determinate solution to monopsonistic labour market equilibrium may be reached by introducing the relevant labour demand and supply schedules. As usual the monopsonistic establishment's demand for labour is based on the workers' marginal revenue product curve. However, the monopsonist's labour supply schedule is that of the market and therefore is upward sloping. This aspect of the supply curve is the major distinguishing feature of monopsony and will ultimately influence the personnel policies adopted by monopsonistic plants. In particular, instead of being able to recruit any quantity of labour at the ruling market price, as in a competitive environment, monopsonists cannot neglect the effect of changes in their demand for labour on the equilibrium wage rate and the resultant supply of potential recruits. Another related feature of monopsony is that the marginal cost of recruiting additional staff lies above the supply price, in that besides offering higher wages to new employees the monopsonist also has to offer higher wages to existing workers.(2)

DIAGRAM 2.1 MONOPSONISTIC LABOUR MARKET EQUILIBRIUM



The impact of the rising supply curve associated with monopsony is shown in Diagram 2.1. Given that the monopsonist is a profit maximiser the equilibrium labour market solution will be where the marginal wage cost (MWC) equals the marginal revenue product (MRP). Therefore, the equilibrium solution for the employer is at E, where the wage rate is OW_1, and the employment level ON_1. There are several important points to note about this equilibrium. Firstly, both the wage rate and the employment level are lower than the competitive equilibrium since under perfectly competitive conditions the wage would be OW_2 and the associated level of employment ON_2. Secondly, wages are no longer fixed for the employer as a result of exogenously determined market conditions, but are determined by demand within the firm and the marginal cost of hiring additional labour. Thirdly, the firm faces job vacancies in equilibrium since in the diagram the monopsonist would be willing to hire N_1N_3 additional workers at the equilibrium wage rate, but

(2) This, realistically, assumes that the monopsonist cannot discriminate between workers by only offering higher wages to new recruits.

the rising supply curve rules out this possibility since it involves the payment of higher wages. Fourthly, strictly speaking the establishment's marginal revenue product curve is not a labour demand curve. A monopsonist has no labour demand curve in the sense of a simple relationship where the quantity of workers demanded is a function of the prevailing wage rate. The number of workers employed depends not merely on the height of the supply curve in relation to the marginal revenue product schedule, but also on the gradient. That is, the slope determines the position of the marginal wage cost curve which in turn influences the quantity of labour demanded. (3)

2. MONOPSONY THEORY REVIEWED: RELAXING THE MODEL'S UNDERLYING ASSUMPTIONS

The diagramatic representation of monopsony illustrates the textbook case of one buyer in the labour market facing a positively sloped supply curve. Hence the employer sets wages at an "exploitation" rate below marginal revenue product, and creates a lower overall level of employment in the local labour market. The model as it stands, particularly in relation to its underlying assumptions, bears little resemblance to identified local labour market structures. (4) Therefore, to test the strength and flexibility of the theory, the model must be further developed and the restrictive assumptions imposed by the original model either dropped or relaxed.

2.1 Imperfect Information

There is ample evidence to suggest that imperfect information inhibits the operation of labour markets (see Rees, 1973, Chapters 4 & 5; Stigler, 1962; Robinson, 1970; MacKay et al 1971; and Rees 1966).

---

(3) In terms of the diagram, if a more inelastic supply function passed through point G this would generate a marginal wage cost curve lying above the present schedule and this means that the level of employment in the plant would be lower.

(4) See Section 6 of this Chapter.

Consequently, the assumption that monopsonists have perfect information at zero cost may seriously restrict the predictive value of the standard monopsony model. However, it has been demonstrated that the relaxation of the assumption of perfect information, and therefore of zero recruitment costs, may be incorporated into the monopsony model without changing the basic predictions of the theory. For example, Devine (1969) has shown that it is possible to derive a unique least-cost combination of recruitment and wage costs for every quantity of workers demanded (see also Wolitz 1970). Moreover, the resulting minimum average outlay curve is positively biased and therefore has a marginal outlay curve lying above it. In this way imperfect information may be treated as a cost and incorporated into the standard monopsony treatment. Calculating the equilibrium solution follows as before providing answers of a similar nature to the original model with the monopsonist offering a wage below the competitive rate in association with a restricted level of employment. This approach to imperfect information and recruitment costs may be extended to other forms of personnel costs which could be substituted for high wages in an effort to increase the supply of labour.

Unfortunately, dealing with information deficiencies in this way does not solve another of the problems associated with this characteristic of labour market behaviour, which is that as soon as imperfect information is introduced into labour market analysis the concept of a rising supply curve is no longer unambiguously associated with a monopsonist. That is, labour market information deficiencies imply that even non-dominant firms may face a positively sloped labour supply schedule, in that to offset information deficiencies among workers all employers must increase wages if they wish to attract additional workers.[5] This upward

(5) For example, when workers are considering changing jobs they may be viewed as weighing up their prospective earnings in their present job against a similar calculation for prospective earnings in a new job. However, workers will differ in their judgement of which wage to transfer at because their time horizons, rate of discount, and estimated unemployment related to alternative jobs cannot be accurately calculated due to information deficiencies. To counteract these difficulties employers seeking to expand must offer higher wages. In doing so the new wage will exceed the break-even point for more workers but this will necessarily impart a positive bias to the employers labour supply functions. For a more detailed discussion on the problem see Reynolds (1945, PP390-411).

slope in the supply schedule may be reinforced by the indirect, but important, costs associated with changing jobs in that workers may be reluctant to leave a workplace and workgroup with its familiar surroundings and well-known associates. In sum, therefore, to overcome either of these factors any employer expanding his workforce may have to offer higher wages to overcome this inertia.

Although the introduction of imperfect information and labour market-inertia may in general impart a positive slope to any employers' labour supply schedule, this should not substantively affect the predictions of the monopsony model in relation to more competitive plants. In particular, it should be stressed that the monopsonist also has to take account of the slope generated by LLM information imperfections over and above contending with supply inelasticities caused by the constraints imposed by the structure of the LLM. Therefore, although the labour supply curve faced by most firms may not be perfectly elastic, ceteris paribus, it will remain more elastic than the supply schedule facing a monopsonist. Consequently, the impact of the positively sloped supply curve on wage and employment levels will be significantly more important in monopsonistic LLMs.

2.2 Non-Homogeneous Labour

One fundamental characteristic of a LLM is the non-homogeneous nature of the workforce. Fortunately, this feature of the labour market may also be incorporated into the monopsony model without radically altering the predictions of the original theory although initially this may not appear to be the case.

Theoretically, most firms will rank potential workers by considering an individual's output in terms of a composite vector of productivity which reflects an overall measure of net worth. In practice, such evaluation will be undertaken subjectively but, nonetheless, some form of ranking will usually be attempted. Using this ranking the employer will list workers in decreasing order of efficiency, which means that ultimately, additional employees will tend to have a lower productivity than the existing labour force, and yet will probably be paid the same wage. Bearing this in mind, if the Y axis of the standard labour market supply and demand diagram is slightly modified to represent the wage cost per worker of standard efficiency then relaxing the assumption of labour homogeneity will again result in all employers facing a positively sloped supply curve. (6)

Despite suggesting that all employers face an upward sloping labour supply schedule because of non-homogeneous labour this may not, however, seriously affect the characteristic predictions of the standard monopsony model. For example, this will be the case if differences in productivities between workers in a specific job or within a specific occupation are minimal. Under these circumstances, the slope will be negligible and the labour supply curve may be considered as being perfectly elastic. It may also be argued that any inelasticity induced by non-homogeneity will again be low because the impact of differences in productivity are severely constrained by other factors. For example, it may be that due to union rules and imperfect information employers cannot recruit labour in a perfectly rational manner. Finally, even accepting that non-homogeneous labour imparts a slope to the labour supply function, this will only serve to compound any basic monopsony result rather than reduce existing differences in variation of elasticity between monopsonistic and competitive establishments. (7)

2.3 Full-Employment

The assumption of full-employment is another feature of the standard theory which should be relaxed if the monopsony model is to

(6) This will normally be the case unless there is some form of payment by result system operating in the plant. For a more detailed assessment of this point see Pencavel (1977).

(7) Although it has been argued that differences in worker productivity do not substantially alter the predictions of the monopsony model this does not imply that qualitative differences between workers do not play an important role in LLM behaviour. This topic will be discussed later in this Chapter and in Chapters 3 and 5.

accurately reflect present labour market realities. Dropping the assumption, however, may potentially remove the distinguishing characteristic of monopsony since the presence of a substantial pool of unemployed workers implies that even a monopsonist need not offer higher wages to secure additional labour. That is, the monopsonist no longer faces a rising supply curve and the marginal cost of hiring an extra worker no longer lies above the supply price. As a result, monopsonistic pricing policies will not prevail and the employer can behave as if the LLM was competitive.

Nonetheless, even in times of high unemployment, there remain instances whereby the monopsonist would face a positively sloped supply curve. It may, for instance, be the case that the supply curve for the unemployed is itself upward sloping. This is a possibility if the pool of unemployed constitutes workers of skill or considerable seniority, or unemployment benefit is high. Under these circumstances workers will then be reluctant to accept a payment below their aspiration level and will instead wait for a higher offer more in keeping with their expectations (see Burton et al, 1971; and Kasper, 1967). In other words if the assumption about non-homogeneous labour is relaxed in association with the assumption of below full-employment then the upward sloping supply curve, and therefore the standard monopsonistic predictions, will still prevail.

A second possibility where unemployment would not affect the supply inelasticity is where unemployment within the LLM is structural and hence job vacancies do not match the skill characteristics of the unemployed. The monopsonistic employer then effectively still faces a situation of full employment, and therefore a rising labour supply curve. A third possibility is a variation of the structural hypothesis. Reflection on the character of monopsonistic employees suggests that such plants will tend to recruit the "primary" or more stable members of the workforce (see Chapter 3 for evidence supporting this). Hence, as many unemployed are primarily unskilled or similarly disadvantaged workers, they are effectively excluded from the monopsonist's supply curve.[8] As

(8) With continuing increases in the level of unemployment this point is becoming less valid.

a result if such an employer wishes to increase his labour force he may have to consider methods other than recruiting from the pool of unemployed. Any such decision will again invariably impart the characteristic inelasticity in the plant's labour supply schedule.

In all, therefore, although conditions of below full-employment initially suggest that a monopsonist will face an elastic labour supply this may not happen in practice. There are a series of overlapping arguments suggesting that, despite unemployment, a monopsonist will face a rising labour supply schedule and will price and recruit workers accordingly.

2.4 Occupational Specialisation Within The Plant

A further general problem associated with analysing a monopsonistic plant's labour market behaviour is that without exception such plants will employ a wide variety of occupations and each group may have a different and distinctive occupational supply schedule. Taking account of different occupational supply curves within the plant could pose significant problems for the empirical identification of monopsonistic influences. (9) That is, each occupational supply curve may have a different characteristic and consequently a unique wage when considered in relation to the plant's labour requirements. Consequently, in aggregate it may be difficult to identify the impact of monopsony on the establishment's overall supply curve (as illustrated in Diagram 2.1) which will tend to reflect several inter-related factors including the occupational distribution of the plant's labour force and the supply conditions facing each occupation. In practical terms, therefore, this means that the concept of one labour supply curve for a plant becomes an

---

(9) Theoretically the problem of inter-plant occupational supply curves will be more acute in a monopsonistic establishment than in an otherwise similar plant operating under competitive conditions. That is, although a competitive plant may face individual occupational supply curves these will all tend to be perfectly elastic at the prevailing wage rate. By contrast in monopsonistic plants there is a further problem in that the elasticities associated with each schedule may differ.

increasingly abstract concept of little use in empirical work.[10]

The only feasible means of overcoming the problem of intra-plant occupational specialisation is at the empirical level. Hence, when analysing the influence of monopsony on individual plants care should be taken where possible to distinguish between key occupational groups. Only at this level of disaggregation will it be possible to begin to realistically attempt to identify monopsonistic influence on plant labour market behaviour.

2.5 Social And Institutional Influences: The Role Of Trade Unions And Administered Wages

The neglect, so far, of social and institutional forces on labour market behaviour is a potentially important shortcoming in the conventional monopsony model of wage and employment determination. In particular, the failure to consider the impact of unions on a monopsonist's labour market behaviour may be considered unrealistic and misleading especially since there is ample theoretical evidence to suggest that unions may be well represented in monopsonistic plants (see Section 3.2), and that such a union presence will, in turn, push wages upwards (See Mulvey, 1978; Metcalf, 1979; and Burton et al 1971).

The above observations may be used to argue that if wages are "administered" by unions in some part independently of market forces then monopsonistic considerations are redundant. Where wages are no longer determined by the interaction of supply and demand it is of less importance if a monposonist faces a rising supply curve since under such circumstances both the low wage and employment levels associated with monopsony will tend to be removed. This feature of

(10) For example, a general wage increase in a plant may lead to a significant increase in the supply of labour to one occupational group, but have little impact on the supply of a more inelastic group. Therefore, focussing on an aggregate supply curve may be quite misleading as regards the wage increase involved in a given expansion of employment.

monopsonistic behaviour is illustrated in Diagram 2.2. In particular Figure (a) shows that the union negotiated wage will normally lie between the points WM and WE (for example WU in the diagram) where WM is the monopsonistic equilibrium and ME is the level of wages where workers receive their marginal products, and hence monopsonistic exploitation is removed. For a more detailed analysis of this see Perlman (1969). The band WM-WE, therefore, is the bargaining range where unions can operate without reducing employment. Within this band WC is the competitive wage equilibrium. Up to this point (that is, between WM and WC) unions can increase the level of employment as well as wages in the plant (for example, N_1 to N_5), beyond this point higher wages will reduce the level of employment.

Despite this it is important to note that, even if unions do influence the monopsonistic wage rate, it does not necessarily follow that this will reduce the differential between competitive and monopsonistic wages. The situation is more complicated than this first figure suggests since if there is also union activity in the "competitive" LLM plants, and if the mark-up in the competitive and monopsonistic markets are the same then, since the monopsonistic LLM starts from a lower base, the wage differential between the two market categories may remain. This feature of the labour market is shown in Figure (b) of Diagram 2.2. In this case (WM + q) is the monopsonistic wage following a union mark-up, and (WC + q) is the higher competitive wage after the same mark-up.

However, and to further complicate matters, it can be argued that even although both competitive and monopsonistic employers may be subject to a union mark-up the level of mark-up may be higher in monopsonistic areas. There are three reasons to support this view:

(i) Unions may be stronger in monopsonistic areas (see Section 3.2).

(ii) Monopsonisitic unions when bargaining are not always sacrificing jobs for higher wages, whereas "competitive" based unions will always face this difficult trade-off.

DIAGRAM 2.2 THE IMPACT OF UNIONS AND ADMINISTERED WAGES ON THE MONOPSONISTIC MODEL

Figure (a)

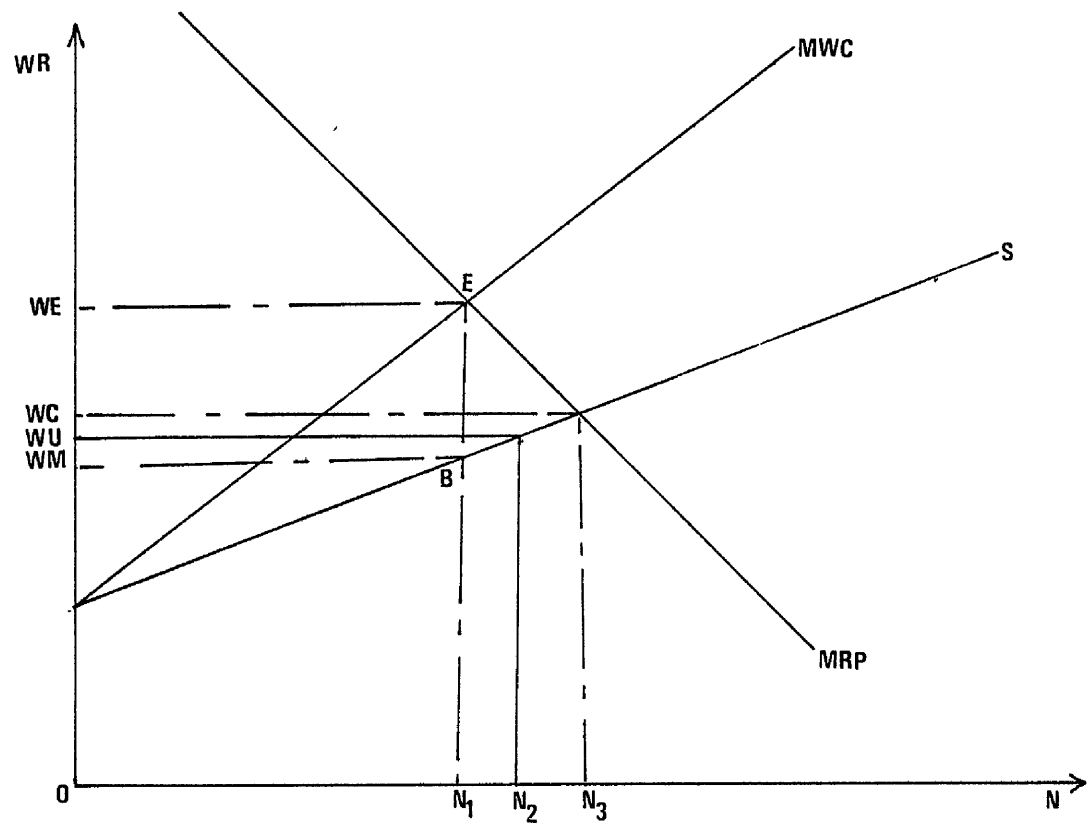
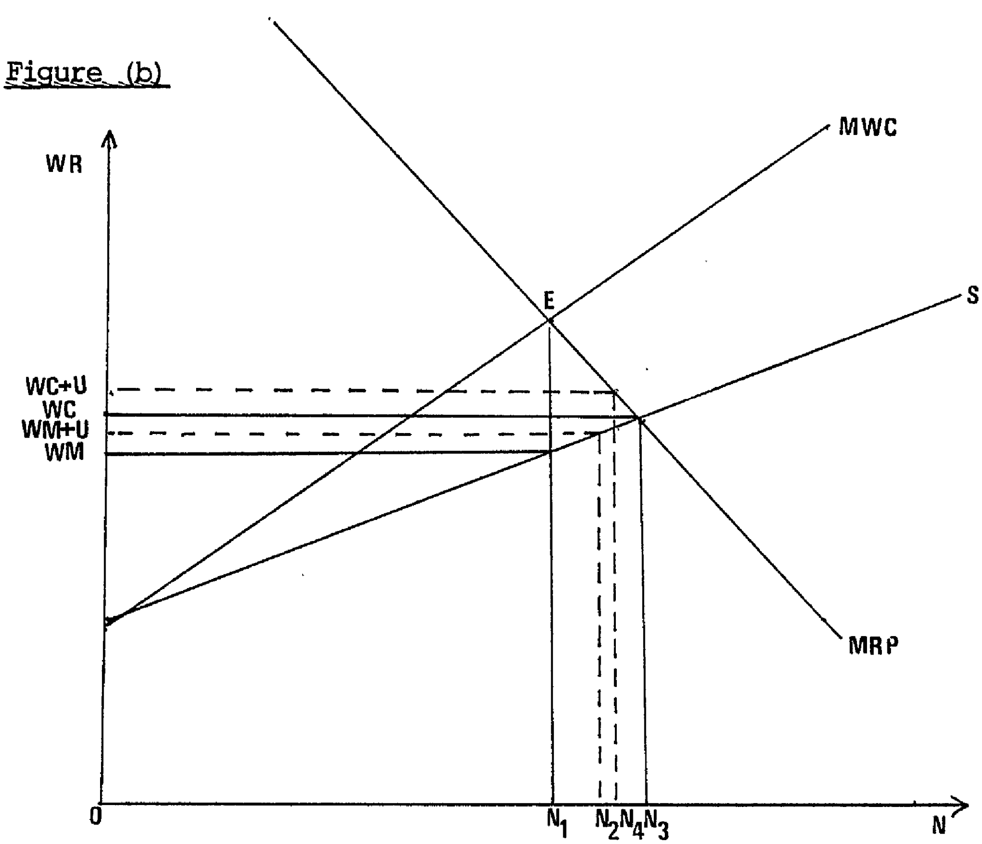


Figure (b)



(iii) Unions may support a policy of eliminating wage differences between LLMs, particularly if the negotiating group were of a similar skill level or worked for the same employer. (see Ross, 1948; Rees, 1978; Rees, 1962; and Benson and Soffer, 1959). (11)

If any of these arguments are sufficiently powerful then again the distinction between competitive and monopsonistic wages will be clouded.

The only remaining argument to support a distinction between monopsonistic and competitve wages is that ultimately underlying market forces, as represented by the local labour market's labour supply and demand conditions, will be too powerful to sustain the institutionall y imposed wage structure. That is, through time market forces may begin to reassert themselves as employers and employees react to the effect of a non-market wage. This does not mean that broad based wage negotiations will no longer be relevant, but rather that these will be considered as a first level of negotiation. Subsequent localised bargaining at plant level will follow, bearing in mind LLM conditions and the influence of factors such as monopsony (for a more detailed explanation of the UK bargaining framework system and the distinctions between national and local bargaining see Donovan, 1968, and Flanders, 1965).

Whether the job vacancy or shortage effects, which are also associated with monopsony, still prevail under the influence of non-market pressures will depend on the extent of the administered wage. In terms of Figure (a) in Diagram 2.2, if the wage increase falls within the region WM-WC then job vacancies in equilibrium will continue to exist. If the administered wage is pushed above this then the

---

(11) Pressures for such a policy designed to take wages out of competition may also be applied by multiplant employers who, in wishing to simplify their bargaining structure, and thereby avoid administrative and negotiating difficulties, may seek to adopt an "equitable" wage structure throughout the organisation. Naturally this policy will also tend to eliminate inter-LLM wage differentials.

monopsonist will not face shortages. The impact of an administered wage on the employment effect associated with monopsony is less clear. Between WM and WC an administered wage will increase employment up to the competitive level N3, above WC employment will fall until it ultimately reaches N at W. How this compares to a competitive type local labour market also with an administered wage is indeterminate since the respective employment levels depend on the particular size of the mark-ups and the shape of the labour supply and marginal product schedules.

The different and inconclusive possibilities and proposals suggested in this section can only be resolved empirically by trying to establish whether institutional forces do influence the monopsony model and its associated predictions. This will involve examining the nature and extent of trade union bargaining in such plants and the monopsonistic employer's overall attitude towards the wage determination process. Furthermore, the research will also have to investigate the additional factors influencing wage determination so that it should ultimately be possible to indicate to what extent a monopsonistic employer has freedom to develop the establishment's own wage structure in response to its unique local labour market environment.

2.6 The Empirical Representation Of Monopsony : Dominated LIMs

Monopsony theory has been developed primarily as a useful abstraction designed to explain the fundamental pressures influencing behaviour in a very specialised and polarised category of local labour market. Not surprisingly, therefore, monopsony in the text book sense is strictly not applicable to a study based on the analysis of LIMs which without exception will contain more than one employer. The closest approximation to a monopsonistic LIM or plant is where a single plant dominates the local labour market employment structure. Under these circumstances the dominant plant may be expected to embody many of the characteristics associated with the monopsony model. [12]

(12) Assuming, of course, that the empirical definition of dominance is sufficiently close to monopsony and not more applicable to another model of local labour market behaviour (see below).

Within the context of this study, but temporarily departing from the theoretical discussion, Table 2.1 summarises the degree of monopsony associated with the dominant plants investigated in this study. Examining the key figures presented in the table provides a tentative indication of how realistic it is to apply a monopsonistically based model to dominated LLM structures. One of the characteristics of dominance which is highlighted in the table is the extent to which the identified local labour markets are concentrated in the lower range of the dominance spectrum. (13) Approximately 57% of dominated local labour markets fall within the lowest category of plant dominance (12.5 - 22.5% of total LLM employment), whereas only 16% of the LLMs fall into the 2 highest categories of dominance (over 36% of the local labour market employed in the dominant plant). (14) Assuming that most local labour markets have a reasonably balanced industrial structure and establishment hierarchy, this result is not surprising. That is, since dominance itself is relatively unusual it will be even more unusual for a LLM to be associated with the extreme or polar version of this characteristic. That is, since in the first place it is unlikely that a local labour market will be dominated, the greater the extent of dominance the less likely it will become. (15)

Despite the bias towards plants in the lower end of the dominance range the effect of monopsony should still, at least partly, be evident in the behaviour of the identified LLMs. Nonetheless,

---

(13) See Appendix 2 for a definition of dominance.

(14) Naturally when only manufacturing employment is considered the extent of dominance is significantly increased.

(15) Unfortunately, due to time and resource constraints it was not possible to extend this analysis to cover the non-dominant control group used in the analysis and thereby compare dominance levels between the two categories. Nonetheless, Appendix 2 does indicate that there is a high number of LLMs well below the 12.5% threshold. That is, there is not merely a marginal distinction between the dominant and non-dominant groups.

given the bias towards the lower end of the dominance spectrum there remains a danger that some monopsonistic trends will not be so readily identified when analysing the entire dominant sample. To overcome this problem it will be advisable, where appropriate, to analyse the low dominance and high dominance group separately. That is, the more tenuous manifestations of monopsony may only be identified at the more extreme levels of dominance where supply inelasticities and the other characteristics associated with dominance become more prevalent.

Table 2.1 also shows the relationship between the extent of plant dominance and some of the other characteristics of the LIM. Focussing on this, one point that emerges from the table is that the lower dominance group also tend to be located in the larger LIMs. For example, the average total population in the lowest dominance category is 75,000, whereas the figure for the two highest groups is approximately 60,000. It is important to recognise this pattern as this trend may ultimately influence some of the hypotheses under test. (16) (17) However, given the range of LIM sizes and the distribution of sizes this pattern is as expected. The smaller the LIM the more likely it is that a single plant, whose size is presumably for the most part determined by non-local consideration, will dominate the area. Furthermore, within the dominant group the most dominant plants will be associated with smallest LIM. It is also worthwhile noting from the table that there does not appear to be any relationship between the extent of dominance and LIM acreage. Therefore there is no relationship between population density and

---

(16) For example, LIM size may affect the level of wages paid by dominant plants since there may be a positive relationship between LIM size and wages (see Fuchs , 1967). That is, LIM size rather than monopsony may be the cause of wage differences.

(17) Note that the dominated sample (in total) will tend to be located in smaller LIMs than the control group of plants used in the empirical analysis. Unfortunately, it is not possible to show exact figures of this, as in many cases the sizes of the Control Group LIM's are unknown. Nonetheless, since they are all in major conurbations it is realistic to assume that these plants operate in large markets.

TABLE 2.1 THE EXTENT OF MONOPSONY IN DOMINATED LIMs

% of total employment in DP	approx % of manufacturing employt.in DP	no of plants	% of plants	total population 1971	manufacting pop. 1973	acreage	average size of plant	population density
12.5 - 22.5	25 - 45	21	56.8	75,331	19,049	14,845	5,993	5.07
22.6 - 32.6	45 - 65	10	27.0	65,773	17,011	13,769	8,8750	7.5
32.6 - 42.5	65 - 85	3	8.1	58,820	12,600	20,455	7,735	2.87
42.5	85	3	8.1	59,370	14,644	15,881	13,102	4.5
Total/ Average	22.6	37	100	70,115	17,618	15,093	7,448	4.64
Non dominated LIMs				100,692	17,463	13,623		7.39

NOTES:- i) Column 2 assumes that manufacturing employment is approximately 50% of total employment

ii) LIM size is measured by acreage, manufacturing employment, and total employment; as expected the 3 measures are correlatd.

iii) Plant size data is taken from the personnel policy questionnaire returned by each plant.

iv) The average size of groups two - four (ie the HIGH DOMINANCE group on the computer) is 9357.

v) The average level of dominance is 22.6 of the total employment.

vi) Population density is measured as total population/acreage.

dominance. This is perhaps a little unusual given the relationship between population and dominance.

Returning to the theoretical considerations related to whether a monopsony model is a sufficiently realistic representation of dominance it should be said that in view of the multi-plant structure of the dominated LLM sample it may be more appropriate to develop oligopsonistic rather than monopsonistic models to explain dominant plant policies. That is, as there will be at least several plants in each LLM it may not be sufficiently realistic to suggest that one establishment, albeit dominant, can act independently of others when operating in the LLM. A more realistic interpretation of dominant plant personnel policy and labour market behaviour may involve taking into account the actions and responses of other employers.

Unfortunately, given the available data on LLM structure (see Appendix 2 for details) it is not possible to test oligopsonistically based hypotheses. More specifically, the data available to the project was severely limited in terms of accurately identifying the plant size hierarchy in any LLM. In practice it was often only feasible to identify the dominant plant within the LLM and also establish whether or not there were other plants in the area approaching its size. In other words the detailed information required to meaningfully identify oligopsonistic LLMs was, generally speaking, not available.

Allied to this severe practical constraint it should also be noted that developing models of oligopsony also poses difficult theoretical problems, not least of which is the variety of oligopsonistic models available. Depending on LLM characteristics, such as employer size structure and occupational mix, a number of complex oligopsony models may be developed each one with its unique predictions. As a result it will be difficult to identify any underlying characteristics associated with dominant plants. [18]

---

(18) This feature of oligopsony parallels developments in models of oligopoly. For a more detailed discussion of these, and by implication the problems facing oligopsony see Scherer (1970).

In addition to this danger of theoretical fragmentation the other principal technical drawback with oligopsonistic type models is that in many cases their predictions are indeterminate. This conclusion is based on the observation that because of the nature of the conjectural variations between plants it is not possible to derive stable predictions on plant behaviour, or to subsequently test hypotheses on this basis. As a result, trying to develop oligopsonistically based models which are also operationally meaningful is by and large a fruitless exercise. (19)

Bearing in mind the serious practical and theoretical shortcomings associated with using oligopsonistic models as a basis for explaining dominant plant behaviour the only feasible solution to the problem lies with a modified, but enhanced, version of the standard monopsony model. Following this approach the simplicity of monopsony theory should be retained to provide a reasonably general but nonetheless accurate interpretation of the labour market forces influencing dominant plants, without introducing the complexities and uncertainties associated with oligopsonistic models. (20) (21)

Although oligopsonistic models of LIM behaviour are not considered in this section of the study the notion of interaction

---

(19) To be more technical, oligopsonistic competition for workers implies that the labour supply schedule for one firm cannot be determined without knowing the characteristics of the remaining employers' schedules. However, given the existence of conjectural variations, these supply curves depend on the nature of the dominant plant's supply curves which is the original unknown. Consequently, the oligopsonistic system and the LIM system is indeterminate. For a more detailed discussion of this type of problem see Fellner (1959).

(20) The applicability of the monopsony model may be greater than the general statistics presented in Table 2.1 suggest. In particular, the figures in the table may considerably understate the importance of monopsony elements. The true nature of monopsony will tend to be a function of the supply inelasticities associated with specific occupations, some of which may be concentrated in the dominant plant. As a result, at a lower level of disaggregation occupational supply inelasticities may be more acute in dominant plants than the level of monopsony in the LIM indicates.

(21) Given the nature of the dominant LIMs it should be recognised that where monopsonistic hypotheses are rejected in the empirical work a more meaningful explanation may lie in either the oligopsony or competitive models.

between different plants in the LLM is examined in detail in the two later Chapters focusing on the intra-LLM activity of dominant plants. More specifically, this section of the research examines how the presence of other plants within the area may condition the monopsonistic hypotheses developed and tested in this section. As a result, it should be possible to quantify more precisely how important oligopsonistic influences are to the monopsony model. Despite this additional work it would be unrealistic to suggest that this sort of approach could point to a single or set of oligopsonistic models appropriate to dominance. All that can reasonably be expected is that such results will suitably qualify the monopsonistic hypotheses under test by helping to explain any unresolved issues emerging from the empirical evidence.

To summarise, considering the serious shortcomings associated with oligopsonistic models and the operational advantages inherent in adopting the more straight forward monopsony model, it would appear that the latter is the most appropriate starting point for research into dominant plant behaviour. The monopsony model and the fundamental idea of the dominant plant facing labour supply inelasticities is a sufficiently realistic abstraction upon which to develop and test hypotheses related to dominant plant personnel policy. Nonetheless, and rather than ignore the presence of other plants in the LLM, the inter-relationships between the dominant plant and other plants in the LLM are considered separately and at a later stage of the analysis.

2.7 Summary & Conclusions

The objectives of this section were twofold. Firstly, to establish whether the predictions of the monopsony model still prevailed when the restrictive and unrealistic assumptions associated with the standard theory were either relaxed or subsequently enhanced to embody important practical considerations. And secondly, to determine the extent to which the monopsony model is the most appropriate theory on which to base testable hypotheses related to dominant plant behaviour. In both instances it appears that monopsony theory is sufficiently robust and flexible to withstand these challenges.

When the numerous simplifying assumptions surrounding the monopsony model were relaxed it was shown that, with the possible exception of union and other institutional influences on LLM behaviour, the fundamental predictions characterising monopsony are not radically affected. Monopsonistic plants will continue to be characterised by a relatively inelastic labour supply curve and therefore tend to set wages and employment levels below the comparable competitive equilibrium. At the same time, monopsonistic plants will also face labour shortages as a result of these supply inelasticities. On this basis the standard treatment was considered as an acceptable model to both predict and explain behaviour in monopsonistic markets.

With respect to the applicability of monopsony theory as a basis for interpreting dominant plant behaviour it appears to be the most appropriate operational and yet general model available. This conclusion was reached by considering the conceptual and practical problems associated with oligopsonistic models, and reviewing the statistical evidence which suggests that monopsonistic influences may be stronger than initially suggested by the identified levels of dominance.

3. EXTENSIONS TO THE MONOPSONY MODEL

The wider implications of monopsony for plant personnel policy are not considered in conventional monopsony theory since the model is primarily concerned with explaining the fundamental parameters of labour market behaviour, and in particular the wider implications monopsony has for wage and employment theory. Standard monopsony theory, therefore, is restricted to representing a component part of a system developed to explain micro-economic behaviour and resource allocation within a neo-classical framework. As such monopsony theory remains an abstract and highly simplified representation of reality largely unconcerned with the more indirect manifestations and detailed impact of monopsonistic pressures on plant personnel policy.

To establish the overall effect of monopsony on dominant plant behaviour requires further consideration of how, at a more detailed and practical level, the structural characteristics associated with monopsony influence the dominant employer's personnel policy.[22] Theoretical considerations suggest that monopsony will have an impact on plant personnel policy across a wide range of labour market variables. These include: plant recruitment policy; the manner in which the employer reacts to labour shortages; union behaviour in the plant; plant turnover and quit rate behaviour; and employer training policies. Many of these features are inter-related and when combined will serve to reinforce existing differences between dominant plant labour market behaviour and otherwise similar non-dominant plants operating in competitive LLMs.

The extent of monopsonistic influences on plant labour market behaviour may also vary according to the extent of dominance, the nature of the skill groups involved, and other related plant level considerations. Nonetheless, considering the potentially widespread impact of monopsonistic influences its effects should be observable in the identified dominant plant sample.

The way in which each of the additional variables under consideration is influenced by the structural characteristics associated with monopsonistic LLMs is developed in the remainder of the chapter. Each feature of personnel policy is examined on an individual basis dealing initially with the more general features associated with each topic and subsequently focussing specifically on how monopsonistic considerations may influence each of the variables being analysed. In addition to this, since many of the components of plant personnel policy are inter-related the final section of the

---

(22) Of course, besides extending the influence of monopsony to incorporate the effects of additional variables, analysing plant behaviour at a more detailed level will also help identify how dominant plant personnel policy reflects the previously identified wage, employment and shortage effects conventionally associated with monopsony.

Chapter considers how the different aspects of dominant plant personnel policy are connected, and the possible implications this may have on the plant's labour market policies. Where possible, specific hypotheses are formulated relating to the effect monopsony has on each variable. As a result, this exercise provides the basis for the subsequent empirical attempt to identify monopsonistic influences on dominant plant personnel policy.

3.1 The Impact of Monopsony On Dominant Plant Recruitment Policies

Given the quasi-monopsonistic nature of a dominant plant's position within the LLM it seems likely that such employers will adopt recruitment policies which will in some way reflect this characteristic. The objective of this section is to identify whether this argument can be sustained on a more formal theoretical basis. Bearing in mind the wide variations in available recruitment methods this section initially examines the general determinants of plant hiring policies and the effects these often complex influences ultimately have on recruitment methods. Subsequently, and within the general theoretical framework, the impact of monopsony on recruitment methods is discussed. This identifies both the constraints monopsony imposes on dominant plant recruiting policy and the way in which dominant employers react to those pressures and limitations.

Recruitment theory: General Considerations. The prime aim of an employer's recruitment policy is to minimise the overall costs associated with hiring workers, whilst at the same time securing an adequate and continuous flow of suitably qualified manpower to the establishment. To achieve this aim effectively, employers will deploy a range of overlapping and complementary recruitment methods which are designed to enhance the employer's ability to search for and to attract the type of worker required in the plant.

The principal recruitment methods available to employers (See Norris 1976, and Doeringer and Piore 1971) include:

- advertising in the local press
- advertising in the national press

- notifying vacancies to the local Job Centre
- notifying vacancies to non-local Job Centres
- participation in the Employment Transfer Scheme (ETS)
- contacting local Skill Centres
- contacting schools and technical colleges
- hiring private employment agencies
- recruiting "on-spec" job applicants
- using a list of previous job applicants
- contacting former employees
- accepting recommendations from existing employees
- upgrading, training or transferring existing employees and
- offering higher earnings than other local employers.

This list of potential recruitment instruments, whilst not fully comprehensive, covers most hiring methods open to employers. The range of available instruments and the variety of possible combinations, also highlights the flexibility open to an employer when developing an overall recruitment strategy. Therefore, to ensure an effective recruitment policy employers have to consider in their decision-making process, a variety of factors all of which condition the plant's hiring behaviour. These influences include: the cost of implementing recruitment methods; the overall level of demand in the LLM; the occupational skill which the employer is seeking to recruit; the industry the plant operates in; the institutional constraints imposed from both within the plant and within the LLM; the competitive position of the plant within the LLM; and finally the structural characteristics of the LLM which may include the extent of plant dominance or monopsony. The cumulative influence of all these factors underlines the complexity surrounding a plant's hiring policy and highlights why they will often be subject to periodic reappraisal and change. This will be especially the case if the labour market is characterised by information deficiences making it difficult for an establishment to accurately interpret labour market signals and consequently adjust its recruitment policy appropriately.

Bearing in mind the range of recruitment methods available to employers and the variety of considerations determining plant recruitment policy, it is difficult to establish a single unified theory of recruitment which may be used to test specific hypotheses about plant hiring policies. Normally, as Doeringer and Piore

(1971) point out, and as is suggested above, a combination of recruitment methods will be employed at any one time reflecting the often unique position of a plant in terms of the underlying determinants of recruitment policy. The mix and sequence of instruments used will vary considerably between enterprises with no single and obvious optimal approach which every employer will adapt in response to specific market stimuli .[23] In more detail, it would seem that the selection of some recruitment methods will remain stable whilst the use of others will vary systematically with external labour market conditions (again see Doeringer and Piore 1971). Individual plants, therefore, are likely to gradually evolve recruitment policies which represent the combined effects of different economic and institutional stimuli, with the employer likely to make an implicit valuation of the probable costs and benefits of alternative strategies.

Despite the obvious complexity of a plant's recruitment process, it remains possible to derive basic predictions about employer recruitment strategy by dividing hiring methods into two categories which may be called passive recruitment instruments and active recruitment instruments. Each of the groups is united by several common characteristics which enable broad based hypotheses and predictions to be developed regarding employer attitudes towards recruitment.

Passive hiring policies are characterised by relatively informal and inactive employer attitudes towards hiring labour and generally involve relatively inexpensive or costless methods of recruiting since, in most cases, the costs are borne by the worker.[24]

---

(23) That is, selecting between alternative instruments will reflect estimates of their absolute and relative costs and benefits, although it is difficult to rank recruitment methods into a clearly defined cost hierarchy (see again Doeringer and Piore, (1971) for a more detailed review of the arguments).

(24) In general, passive recruitment methods embody several major advantages besides their relatively low cost. One of the principle benefits is that these instruments are relatively easy to manage in that the recruitment methods are directly controlled by the employer and therefore can be modified quickly. In addition some of the recruitment methods incorporate a preliminary screening mechanism. For example, existing employees referring applicants to the plants will be reluctant to nominate unsuitable workers.

Passive recruitment methods include; recruiting on-spec applicants, accepting recommendations from existing employees, using a list of previous applicants, and contacting former employees. [25] The use of passive recruitment methods are normally associated with periods of unemployment when there is an available supply of labour seeking employment. Under these circumstances using passive recruitment methods will be the most cost-effective solution to a plant's recruitment options.

Active recruitment methods differ significantly from passive instruments in that they largely reflect situations where the employer adopts a more aggressive role towards recruitment and which, as a result, often involves significant costs to the employer rather than the employee. The most widely recognised active hiring mechanisms are: local and national advertising; offering higher earnings; upgrading training and transferring existing employees; contacting Skill Centres, schools and technical colleges; and using private employment agencies. In view of the costs associated with active recruitment methods employers tend only to use them intensively when faced with low unemployment or specific labour shortages (see Deoringer and Piore, 1971). That is, as the LLM tightens the more passive methods of recruitment will no longer operate effectively reflecting the increased scarcity of prospective employees. In turn, this shortage of suitable recruits dictates that establishments adopt a more aggressive and resource intensive approach towards recruitment and the burden of search effectively shifts from worker to employer.

Besides the relatively employer-expensive recruitment options, there are other active recruitment methods that to some extent embody the characteristics of the passive group in that their costs are borne by government in order to increase the efficiency of the market. These include: the notification and handling of job vacancies by local and other Job Centres, and making use of the

---

(25) The distinction between active and passive recruitment methods is not always clear cut, for example, contacting former employees could be viewed as an active recruitment method.

Employment Transfer Scheme. Given the cost characteristics associated with these recruitment methods they will tend to be used even under circumstances of high unemployment, and their use will not increase significantly as the labour market tightens. (26)

Within a plant's overall recruitment strategy it is also important to distinguish between the principal skill groups under recruitment by an employer, especially as the supply characteristics facing each group may vary considerably and this may significantly ffect recruitment efforts. In particular, recent evidence suggests (see Hunter and Beaumont, 1978; and the Scottish Council, 1979) that it will be more difficult to recruit skilled workers than other manual groups. In time, this problem should manifest itself in plant recruitment policy through the relatively high use of active and generally more costly recruitment methods when an employer is seeking to hire skilled workers.

Summarising the general discussion on recruitment it seems that a complex and inter-related range of factors will influence plant recruitment policies, which correspondingly have to be sufficiently flexible to cope with most LLM situations. Employers, reflecting this, will tend to develop particular combinations of recruitment patterns to handle a specific market environment. Passive and government sponsored recruitment methods will tend to be used in time of high unemployment, and active instruments will assume more lasting importance in tighter labour markets. Within any LLM prolonged shortages of skilled labour also suggests that active recruitment methods will be used more intensively to increase the supply of the appropriate shortage groups.

Recruitment Theory : Monopsonistic Considerations. In addition to the general economic conditions influencing employer hiring patterns

(26) To briefly mention a complication to this basic model, note that whilst some methods may be cheap for securing candidates (for example, the public employment service) compared to others (for example, private agencies) there may be a trade-off in that private agencies may produce better candidates in the sense that they better reflect the employer's specification.

dominant plant recruitment policies may also be influenced by the quasi-monopsonistic conditions prevailing in the LLM. That is, the relationship between the plant and the market in a dominanted LLM will tend to produce characteristic recruitment patterns as the dominant plant adjusts to meet the constraints imposed by its environment.

The most important characteristic of monopsony which may influence dominant plant recruitment policy will be the inelasticity of the dominant plant's labour supply curve, and the resultant tendency for monopsonistic conditions to create labour shortages. That is the inelasticity of the labour supply curve will tend to encourage dominant plant to adopt recruitment policies which, other things being equal, will differ from those adopted by otherwise similar non-dominant plants. In particular, the principal impact of the relatively high inelasticity facing the dominant plant will be to induce such employers into devoting proportionately more of their recruitment effort into attracting labour from outside the LLM. This suggests that, given the appropriate market conditions, dominant plants will tend to favour the following recruitment methods: advertising in the national press; asking the Department of Employment to notify vacancies to Job Centres in other areas; and using the Employment Transfer scheme. [27] These policies may all be considered as alternative methods of extending the dominant plant's LLM boundary and reducing the recruitment constraints imposed by an inelastic labour supply curve. In adopting this policy dominant employers are effectively increasing the elasticity of their labour supply schedule and thereby stimulating more

---

(27) Increasing the wage-rate in dominant plants may also broaden the scope of the LLM. However, besides purely economic considerations, the ability of the plant to make short-run adjustments to wages in response to recruitment pressures may be limited since wage determination tends to be dominated by other considerations. See, for example, Doeringer and Piore (1971). Note also that the use of the Employment Transfer Scheme is an extremely limited phenomenon and is largely controlled by the Employment Service.

competitive LLM conditions. By contrast, similar plants operating in a competitive LLM will not require to adopt such a strategy since the perfectly elastic nature of their labour supply curve at the prevailing wage rate implies that they have sufficient labour supplies within the boundaries of their LLM.

The tendency for the dominant plant to face shortages as a consequence of the rising labour supply schedule also suggests that the plant will have to recruit more actively and aggressively than similar competitive plants. In practice, this means that dominant employer recruitment methods will be biased towards the more costly recruitment policies normally associated with tighter LLMs. Under these circumstances dominant plants may also seek to alleviate shortages by concentrating on personnel policies designed to alleviate shortages from within the plant. In particular, this would be reflected in efforts by such employers to "upgrade, train, or transfer" their existing staff.

Besides directly effecting the recruitment policies adopted by dominant plants, monopsonistic conditions may also influence the procedures adopted when recruiting labour. More specifically, if dominant plants suffer disproportionately from shortages then screening procedures will tend to be relatively slack when compared to control group operations. This is because the use of less stringent procedures will effectively enable the dominant plant to increase the size of its available labour pool. This policy, therefore, will help reduce LLM labour supply inelasticities, albeit at the cost of recruiting lower quality workers.

In addition to the effects of labour supply inelasticities on dominant plant recruitment behaviour the pre-eminent position of the dominant plant in the LLM may also influence the approach the employer adopts when using the recruitment services provided by the Job Centre. The nature of the dominant plant's association with the public employment agency is conjectural as there are two separate and opposing arguments on how the relationship may develop. On the one hand, the importance of the dominant plant in relation to the LLM and its welfare may lead to the dominant plant and the Job

Centre developing close links with one another. If this type of cooperation is developed in a quasi-monopsonistic LLM it may tend to manifest itself through a series of special arrangements designed to help the dominant plant overcome its recruitment difficulties and supply inelasticities. Such special arrangements might include more intensive use of the Job Centre, help with the recruitment of particular types of workers, or help with interviewing and selecting employees.[28] The same level of co-operation and interdependence will probably not exist in more competitive LLMs where the local Job Centre will have a number of equally important clients.

The alternative and opposing argument on the use of the Job Centre is that the visibility of the dominant plant within the LLM means that the employer will not require Job Centre assistance when recruiting labour. Workers will be sufficiently aware of the dominant plant and the work conditions prevailing in the establishment to by-pass the Job Centre as a means of helping them secure employment. Of course, under conditions of total monopsony there would be no need for the Employment Service because there would only be one employer in the LLM. Resolving these conflicting arguments is an empirical exercise the results of which are examined in Chapter 3. However, it should be borne in mind that the attitude of the dominant plant to the Job Centre may change depending on prevailing labour market conditions and the skill groups under recruitment. Consequently, the relationship between the dominant plant and Job Centre may be unstable.

Bearing in mind the previous discussion on the basic determinants of recruitment policy it should also be recognised that the impact of monopsony will tend to vary depending on the level of demand within the LLM, and the type of labour being recruited. Generally the tighter the LLM, and the higher the proportion of

(28) Note that even if dominant plants do not use Job Centres more frequently than the control group this does not necessarily imply that Job Centres do not provide specialised assistance, or indeed that the dominant plants do not use the Job Centre on a more intensive basis.

skilled workers under recruitment, then the more important monopsonistic conditions become. It will also tend to be the case that the higher the level of LLM dominance then the more appropriate the monopsony model will become, and correspondingly so to will the recruitment characteristics associated with it.

In summary, monopsony may affect plant recruitment policies in several ways depending on its significance within the LLM and the skill group under recruitment. Nonetheless, other considerations remaining equal, dominant plants will tend to respond to monopsonistic constraints by focusing more of their recruitment efforts outside the LLM. At the same time dominant plants will tend to recruit more aggressively than comparable plants operating in a competitive LLM. These circumstances may also induce dominant plants to relax their screening procedures in an effort to broaden their available labour supply. The institutional relationship between the dominant plant and the Job Centre may also result in characteristic recruitment policies and even serve to offset the effect monopsony has on recruitment methods.

3.2 The Impact of Monopsony On Dominant Plant Unionisation

Unionisation levels and union behaviour are subject to a variety of political, sociological, ethical, legal and institutional forces. However, despite these combined influences on union behaviour the most important reason for workers joining a union appears to be for personal gain and to protect or improve their economic position (see, for example, Van De Vall, 1970; and Seidman et al, 1951). By unionising workers develop an effective countervailing power against the employer, thereby allowing their representatives to bargain from a position of increased strength and solidarity. Therefore, by joining a trade union, workers may satisfy their objectives either directly through negotiations at plant level, or indirectly through wider economic and politically based union activities. In addition to, but also related to, improving an individual employee's economic position many workers join unions as an effective means of providing "conflict insurance". In this case the collective power of the union helps strengthen a worker's grievance claim where otherwise he would be forced to act alone against the more powerful employer (for example, see Van De Vall, 1970, P125).

The ability of workers to organise effectively, and thereby take full advantage of the potential benefits offered by unionisation, will, in part, be influenced by the environment facing workers within the plant and within the LLM. In this respect monopsony will be important since its presence has implications for the distribution of economic power both within the LLM and the plant. One important characteristic of monopsony, and therefore to an extent dominance, is that in such LLMs the workforce will tend to both live and work in a shared environment. This may effect the level of unionisation in a dominant plant since in such an environment the degree of interaction between workers will tend to increase. That is, bonds between workers will strengthen as they develop a common identity associated with their compatible aims and problems, and one means of developing these common feelings is through joining a union. Monopsonistic plants may also display relatively high levels of unionisation as a result of the greater need for conflict insurance in such LLMs. That is, as there are relatively few alternative job opportunities in dominated LLMs workers in quasi-monopsonistic plants will be more inclined to join unions thereby forming an effective countervailing power to protect their interests against a relatively powerful opponent.

Observable differences in the level of unionisation in dominant plants may also reflect active campaigning by unions rather than simply a reaction by the workforce precipitated by environmental conditions (see Boraston et al, 1975). More precisely, as the dominant plant is the largest employer in the area, and to some extent the focal point of the LLM, it may become a target for union activities. That is, union officials may believe that if the dominant plant can be successfully organised then other LLM employers will follow. Accordingly, union actions may serve to reinforce the pro-union attitude of the dominant plant workforce which will again result in relatively high levels of unionisation in such plants.

Although there are strong arguments in favour of dominant plants displaying above average levels of unionisation these need not always prevail as there may also be monopsonistically induced pressures serving to restrain union activity. The economic power of the quasi-monopsonistic employer is one potential constraint to effective unionisation. In many cases if the dominant employer's philosophy was strongly against unionisation this would tend to discourage workers from becoming union members, given the limited employment opportunities available in the LLM outside the dominant plant. To overcome this barrier would involve a long process of attrition between worker and employer, and employees may decide that the costs of such industrial conflict outweigh the benefits associated with unionisation. A related argument is that dominant employers may follow personnel policies which avoid the need for union representation within the plant. For example, and bearing in mind the nature of dominance, employers may adopt a paternalistic attitude towards their workforce. Under these conditions a spirit of common goals rather than conflict would be engendered (see Norris, 1976, Lane and Roberts, 1971; and Bain and Elsheikl, 1980) and there would be little need for unions either to promote separate worker aims or act as a source of conflict insurance. (29)

In summary, there are strong arguments to suggest that dominant plants may display higher levels of unionisation than otherwise similar non-dominant plants. Such relatively high levels of

---

(29) In particular, Bain and Elsheikh (1980 P 176) suggest that in a paternalistic firm, "employees are more likely to be treated as individuals rather than as members of categories or groups, and their terms and conditions of employment are more likely to be determined by the personal relationship between them and their managers rather than by formal rules which apply impersonally to all employees. In such circumstances employees are less likely to be aware of their common interests, and the growth of trade unionism is likely to be retarded. In addition, paternalistic employers and managers are much more likely to be opposed to recognising trade unions in their establishments, regarding them as external bodies which interfere in what is essentially a private relationship between employer and employee."

unionisation would probably reflect the attitudes developed whilst working in a monopsonistic environment and active union pressure to organise the key employer within the LLM. However, under certain circumstances the reverse may prevail and unionisation may be constrained in a dominant plant. This may result from the dominant plant exercising its economic power in resisting attempts to organise, or by the quasi-monopsonistic environment generating a conciliatory rather than a conflict relationship between the unorganised workforce and plant management.

3.3 The Impact of Monopsony On Dominant Plant Training Policies

Employee training programmes are one of the most widely used, flexible, and easily implemented methods of improving worker efficiency and output (for example, see Proctor and Thornton, 1971). However, taking account of, and subsequently trying to explain, the many factors conditioning an employer's training strategy is an extremely involved exercise. Nonetheless for practical purposes, and as a first step towards identifying the impact of monopsony on dominant plant training policies, this difficulty may be overcome by assuming that the single basic objective of a training strategy is to maximise the benefits and economic return to the employer from investments in human capital.

By accepting this one simplified aim it is then possible to derive an economic model of an establishment's training policy by dividing human capital investment decisions into general training programmes and specific training programmes. General training relates to the investment in human capital which raises the productivity of the worker not only with his present employer but also with others in the area. Specific training, by contrast, only increases the productivity of the worker in the plant providing the training. Each of the two categories has radically different implications for plant training policies and highlights the basic economic parameters determining an employer's training strategy. In particular, by distinguishing between general and specific investments, an employer will be able to assess both the optimal quantity of training required, and the allocation of training costs between employer and employee. For a formal exposition of the theory underlying this model of training see Becker (1964) and Blaug (1970).

The distinction between general and specific investment, and the resultant impact on plant training decision will to some extent be affected by the structural characteristics of the LLM environment. One of these LLM characteristics will be the level of monopsony prevailing in the market. In this section the impact of monopsony on industrial training will be evaluated once the distinguishing features of general and specific training have been identified, since this provides the economic framework for predicting how monopsony may influence an employer's investment in human capital.

General training has been defined as an investment in human capital which increases a worker's marginal product and wage in all LLM establishments. One consequence of this characteristic is that an employer has no economic incentive to finance an investment in general training since there would be no guarantee that an employer could successfully amortise any investment in human capital. That is, under circumstances of employer financed general training the worker would receive a wage equal to his enhanced marginal product. However, as this wage would be equal to his marginal product in other establishments there would be a continual danger of generally trained workers quitting and the employer thereby forfeiting his investment. (30) As a result of these market pressures rational employers will seek to shift the cost of general training onto employees thereby avoiding the financial losses associated with this type of training. Employees, for their part, will be willing to bear the cost of general training as their outlay, usually represented by a training period wage set below their marginal product, will subsequently be offset by higher earnings in future periods of employment.

---

(30) Indeed, in a perfectly competitive LLM any employer financing general training would be unable to match an employee's alternative wage due to incurred training costs. As a result, an employer financing general training would be at a competitive disadvantage.

Specific training differs from general training in that it only enhances workers' marginal productivity in establishments where the training is provided. This restricted applicability of specific training has important implications for the allocation of training costs between employer and employee. In contrast to the general training case there is no incentive for an employee to invest in specific training. Investment in specific training does not raise an employee's alternative marginal product, and therefore an employer is not under any economic pressure from other establishments in the area to increase the earnings of a worker investing in specific training. Consequently, an employee investing in specific training will be unable to capture the benefits of his augmented, yet plant specific, marginal productivity through higher wages. Employers, on the other hand, will have an incentive to invest in specific training since, through time, they may recoup their investment costs by capturing the difference between the employees' enhanced marginal product and his alternative or transfer wage. Investment in specific training, therefore, leads to a difference between the workers marginal productivity and his wage, with the size of the difference reflecting the extent of the specific training costs. In practise, however, as Pencavel (1972) and Blaug (1970, PP191-199) suggest, this wage differential will tend to be offset by employers offering a wage above the workers' opportunity wage rate. Employers have a clear incentive to follow this policy since their ability to maximise their return on specific training investments will also be dependent on the length of time the workers remain with the employer and by offering a wage above the LLM opportunity rate the employer, by reducing turnover, will be able to retain this workers over a longer period. An employer behaving rationally will continue to increase his wage premium until the marginal gain from the increased length of service equals the marginal cost of the increased wage bill. At the equilibrium wage rate the harmful effects of turnover will just be matched by the wage, hiring and training costs associated with the reduced turnover rate. [31]

Monopsony has important consequences for plant training policies since its presence effectively clouds the distinction between general and specific training, and thereby modifies the manner in which an employer evaluates his training programme. In particular, the presence of monopsonistic elements will effect the allocation of training costs between employer and employee which, in turn, will have implications for the equilibrium wage offered by the monopsonist. Similarly, the extent of training in a plant will be influenced by monopsonistic considerations operating through the influence monoposony has on both labour turnover and wages (see Section 2 and Section 3.4).

Looking first at the wage implications of monopsonistic training programmes involves recognising that the most important characteristic associated with training in a monopsonistic plant is the absence of truly general training where the employees' augmented product also raises their wage in other LLM establishments. In a truely monopsonistic LLM there are no alternative employers, therefore the employee's enhanced productivity will be restricted to the monopsonistic plant. In effect, the structure of the LLM dictates that training undertaken in a monopsonistic plant will be specific. Accordingly, the employer will fund all training undertaken in the plant and will subsequently recoup his investment by offering a wage below the employee's enhanced marginal product. In comparison with similar plants operating in competitive LLM's this implies that,

---

(31) For an alternative view of the allocation of training costs and their associated implications see Thurow (1975, Chapter 4). In brief, in his job competition model of the LLM Thurow argues that marginal productivity is inherent in the job and not the worker. Thurow states that the job competition model of labour market behaviour will also lead to the development of well structured internal labour markets. As a result of both these features of LLM behaviour the distinction between general and specific training becomes a lot more hazy and the vast majority of training will be provided by the employer. However, rather than adopt this plausible, but largely untested, approach to the problem this study adopted the more conventional model of training and cost allocation.

ceteris paribus, the wages of what would normally be considered as generally trained workers will be lower in a monopsonistic plant. This reasoning, therefore, supports the previously stated hypothesis that wages will be lower in monopsonistic plants.

The economics of specific training will generally remain unchanged in a monopsonistic LLM with the employer financing training and subsequently amortising his investment by capturing the difference between the market wage rate and the employee's increased marginal product. However, in view of the restricted extent of job mobility characterising monopsonistic plants, the post training wage premium required to induce employers to remain with an establishment will be lower than the level required in a competitive LLM. Consequently, *ceteris paribus*, the wage of a specifically trained worker will be lower than that of a comparable worker employed in a competitive plant. Again, therefore, monopsony has a depressing effect on wages.

The lower level of turnover characterising monopsonistic plants (see below), may also influence the level of *per capita* training undertaken by the employer in that low labour turnover will increase the benefits to the establishment of investing in training. More precisely, the employer will automatically capture over a longer period the difference between the workers' enhanced marginal product and their wage. This, in turn, will provide an incentive to increase the optimal level of training in a monopsonistic plant above the level appropriate to similar non-dominant plants. Unfortunately, however, the model is more complicated than this, since whether the extent of *per capita* training will be higher in a monopsonistic plant will also depend on the nature of the wage premia offered by plants in order to reduce labour turnover. That is, the differences between monopsonistic and competitive plants in the extent of *per capita* training may be offset by variations in the wage rate prevailing in each.

Although the level of *per capita* training of new recruits and specific workgroups in monopsonistic plants may be relatively high this need not imply that monopsony positively influences total plant expenditure on training. Indeed if monopsonistic plants are in fact characterised by low quit rates then the need to train new recruits will be reduced and this will tend to cut plant expenditure on training (for further details on this point see Ulman 1955, P155). Which of the two opposing influences effects training costs the most is difficult to asses. Therefore, whether an employer's total training bill is higher or lower under monopsonistic conditions will have to be resolved empirically.

Naturally, in dominated, as opposed to monopsonistic, LLM s the training implications associated with the monopsony model will be less pronounced given that other employers operate within the same LLM area. As a result, in dominated LLM's it will only be possible to observe tendencies towards the predictions offered by the monopsony model. For example, general training programmes may exist in dominant plants but they will be limited due to the restricted alternative job opportunities available to workers financing such an investment. Therefore, the wages of generally trained workers will remain lower in dominant plants. Similarly, turnover will remain relatively low in dominant plants, and so this will also continue to depress wages. Finally, dominance may or may not increase the optimal level of total and per capita training in the dominant plant depending on which of the pressures mentioned previously are the most important.

3.4 The Impact of Monopsony on Dominant Plant Labour Turnover

Labour turnover is a complicated phenomenon subject to many diverse and complex influences including macro economic conditions, the personal characteristics of employees, the conditions prevailing within a plant, and the features of the LLM environment (for example, see Parsons 1977). The most important component of the aggregate labour turnover figure is normally the quit rate experienced by the plant, where the quit rate is defined as the proportion of voluntary separations to the total workforce. (32) The quit rate is considered to be important because it reflects the competitive position of an employer's benefit package as compared to

---

(32) That is, the quit rate excludes worker retirement, redundancies, and other forms of employer initiatd terminations.

other plants in the area. If the plants benefit package is relatively high then the quit rate will be low, and conversely if the plant is uncompetitive then the quit rate will be high.

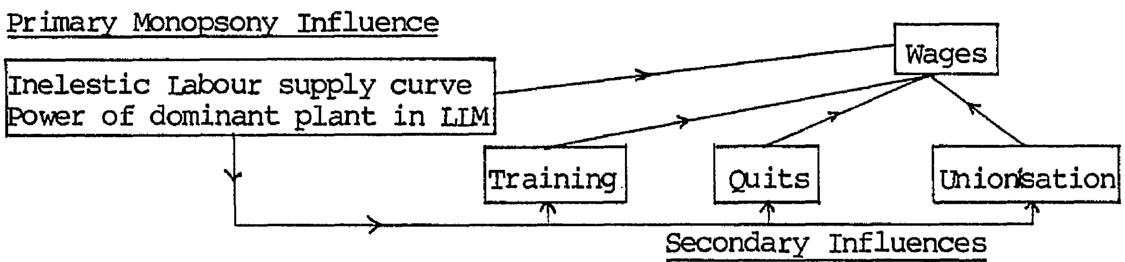
Although the principal factor influencing a plant's quit rate is the level of net advantages offered to employees, the quit rate may also be affected by the structural conditions prevailing in the LLM and the presence of monopsony is one such structural consideration which may condition plant quit rates. Monopsonistic, or quasi-monopsonistic, conditions effectively restricts the number of alternative job opportunities open to workers within the LLM. As a result, a monopsonistic employee may face a prolonged job search and its associated costs if he chose to quit. This should act as a major disincentive to either considering alternative employment or leaving the plant. In addition, any employee taking a long term view would recognise that quitting a job in a quasi-monopsonistic plant may effectively restrict any further job changes within the LLM as the monopsonist may be wary about recruiting an ex-employee. Bearing both these factors in mind, therefore, monopsony will tend to reduce an employee's propensity to quit relative to similar non-dominant plants operating in a competitive LLM. The more extreme the monopsonistic influence the fewer the number of alternative job opportunities and the lower the quit rate. This constraint will apply in particular to the lower skilled groups where geographical mobility and hence the ability to find jobs outside the LLM will be more difficult.

3.5 THE INTERRELATIONSHIP BETWEEN PERSONNEL POLICY VARIABLES AND THE IMPACT OF DOMINANCE

Many aspects of dominant plant personnel policy are closely interrelated and as a result individual components of plant personnel policy are rarely considered in isolation by management. Indeed, most employers tend to treat personnel policy as an integrated system rather than as a series of discrete and isolated components. Consequently, and to be realistic, this approach should be incorporated into any model of dominant plant behaviour. This is particularly true since analysing dominant plant personnel policy as an interdependent model has important consequences for the impact of monopsony on establishment behaviour. In particular, when all aspects of a plant's personnel policy are considered as an interrelated strategy the ultimate manifestation of monopsony on an individual variable may differ significantly from the effects originally hypothesised when each component of personnel policy was reviewed in isolation. To determine the extent to which the original hypotheses developed above have to be revised or qualified, the impact of the more obvious interrelationships between the different aspects of dominant plant manpower policy are considered below for each component of the augmented monopsony model.

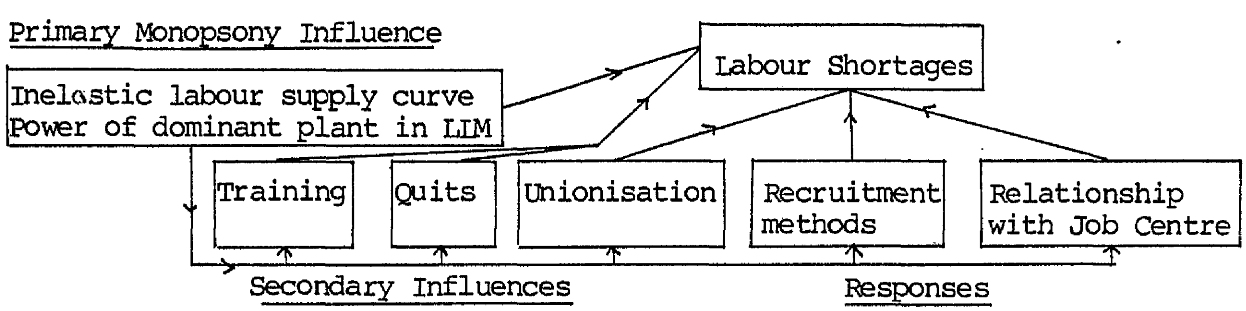
The Inter-Relationship between Monopsonistic Influences: The Impact on Dominant Plant Wages. The extent to which the original low wage hypothesis associated with monpsony is affected by other monopsonistic considerations is shown in Diagram 2.3. The diagram shows that dominant plant wages will be influenced by three other factors: dominant plant training policy, the quit rate, and the level of unionisation. As mentioned previously, and in support of the original hypothesis, the training policies adopted by dominant plants and the restricted employment alternatives characteristic of such LIM's will both tend to produce a depressing effect on dominant plant wages. By contrast, as monopsony may have a positive influence on the level of unionisation in dominant plants this influence may force wages upwards. Accordingly, the net effect of monopsony on wages is indeterminate.

DIAGRAM 2.3 THE OVERALL IMPACT OF MONOPSONY ON WAGES



The Inter-Relationship Between Monopsonistic Influences: The Impact on Labour Shortages. Introducing the interrelationship between monopsonistic pressures has important implications for the labour shortages characteristically associated with the standard monopsony model. Firstly, and as Diagram 2.4 shows, dominant plant training policies will influence labour shortages. On the basis of the previous analysis this will happen in two opposing ways. On the one hand since the dominant plant's training strategy tends to depress wages this will accentuate shortages. On the other hand, if the dominant plant has a relatively high propensity to train this will, to some extent, reduce shortages by increasing the quality and productivity of the existing workforce. Similarly, the effect of the characteristically low dominant plant quit rate on shortages is also ambiguous since although it may produce a depressing effect on wages the low quit rate will also minimise the need to recruit, thereby indirectly easing labour shortages. The other monopsonistic incluences affecting shortages are more straightforward in that they will all probably serve to lessen the plant's labour supply problems. Firstly, monopsonistic pressures to unionise will tend to bias wages upwards and thereby in some measure help attract labour to dominant plants. Secondly, monopsonistically induced recruitment policies will help reduce shortages by improving the attraction of labour from outside the LLM. Finally, special arrangements with the local Job Centre may also help minimise labour shortages and ease recruitment. These last two effects may be considered as more of a response of dominant plants to monopsonistically induced pressures rather than as secondary influences generated by the impact of monopsony on other variables.

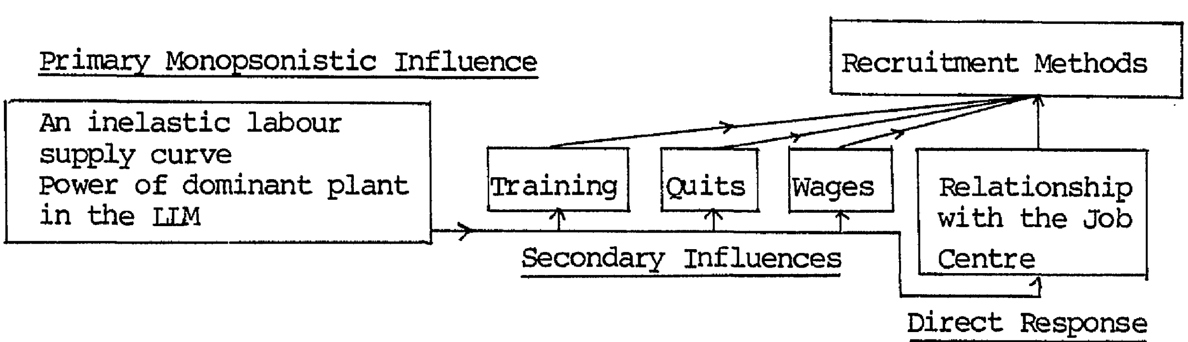
DIAGRAM 2.4 THE OVERALL IMPACT OF MONOPSONY ON LABOUR SHORTAGES



The net effect of all of these considerations makes it difficult to forecast whether shortages will remain a characteristic of dominant plants as the standard model predicts. Not only are there more subtle monopsonistic pressures operating in opposing directions, but the response of the dominant employer to labour shortages may effectively disguise the underlying presence of any monopsonistically induced shortages.

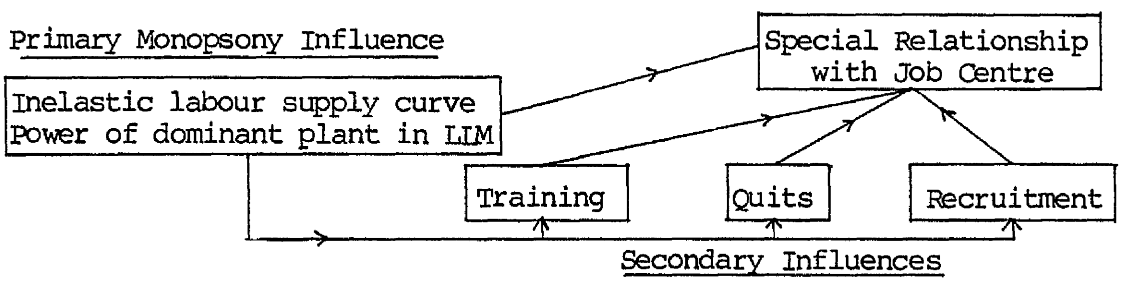
The Inter-Relationship Between Monopsonistic Influences: The Impact on Recruitment Methods. Monopsonistically induced recruitment policies were initially considered as a response to the combined effects of labour supply inelasticities and the related labour shortages. However, Diagram 2.5 suggests that before it is possible to reach a firm conclusion about the impact of monopsony on recruitment, a wider interpretation of the problem is required incorporating several additional influences . In particular, the low wage effect associated with monopsonistic training policies and the low quit rate may accentuate the adverse impact of monopsony on recruitment. However, the effect of training and turnover policies on recruitment makes the overall impact of monopsony less clear cut since these factors may serve either to generate suitable workers internally, or alternatively may induce workers to stay with the plant. The development of special relationships with the Job Centre is the only other additional monopsonistically induced effect influencing dominant plant recruitment policy. If special relationships develop between the Job Centre and the dominant plant then this will serve to reduce the impact of monopsony on recruitment methods. Again, developing special relationships with the Job Centre may be considered partly as a direct response to the recruitment policies faced by the plant rather than as a completely independent monopsonistic influence.

DIAGRAM 2.5 THE OVERALL IMPACT OF MONOPSONY ON RECRUITMENT



<u>The Inter-Relationship Between Monopsonistic Influences: The Impact on Relations with the Job Centre.</u> The wider impact of mompsony on the relationship between the dominant plant and the local Job Centre is summarised in Diagram 2.6. For this aspect of dominant plant behaviour training policies, quit rates and recruitment strategies all tend to further condition the development of special relationships between the dominant plant and the Job Centre. In all cases monopsonistic influences operating on this variable act in the same way by tending to reduce the need for special relationships with the Job Centre, particularly if the adopted policies succeed in alleviating dominant plant recruitment problems and labour shortages. Accordingly, the secondary monopsonistic influences will tend to strengthen the arguments for the dominant plant retaining its independence. However, whether these additional considerations are sufficient to overcome the advantages associated with close cooperation with the Job Centre remains *a priori* indeterminate.

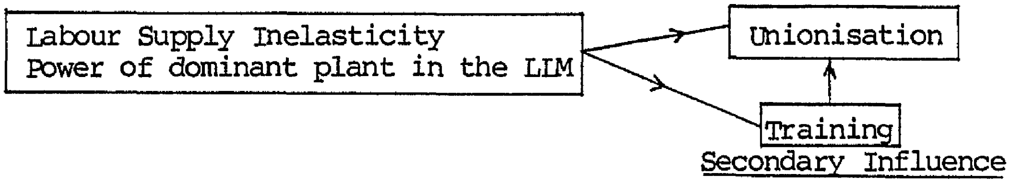
<u>DIAG 2.6 THE OVERALL IMPACT OF MONOPSONY ON RELATIONS WITH THE JOB CENTRE</u>



<u>The Inter-Relationship between Monopsonistic Influences: The Impact on Unionisation.</u> The level of unionisation in dominant plants is one of the few areas where other monopsonistic influences appear to have little impact. The only factor conditioning unionisation (see Diagram 2.7) will be dominant plant training policies where, by further depressing the equilibrium wage, the employer will increase the tendency for employees to unionise. Hence, the impact of training policies on unionisation (via low wages) supports the original monopsony hypothesis which suggested that dominant plants would be characterised by high levels of unionisation.

DIAG 2.7 THE OVERALL IMPACT OF MONOPSONY ON DOMINANT PLANT UNIONISATION

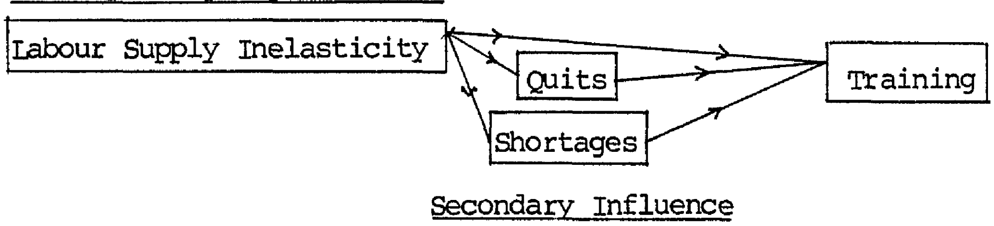
Primary Monopsony Influences



The Inter-Relationship Between Monopsonistic Influences: The Impact on Dominant Plant Training. As Diagram 2.8 shows, the effect of monopsony may influence dominant plant training programmes through the impact on shortages as well as more directly through the low quit rate associated with monopsony. That is, a dominant plant may decide that increasing the level of training within the plant would be one effective means of reducing the manpower shortages caused by labour supply inelasticities. If this is the case then the original hypothesis suggesting that dominant plants favour relatively high training levels will be reinforced.

DIAG 2.8 THE OVERALL IMPACT OF MONOPSONY ON TRAINING

Primary Monopsony Influence



The Inter-relationship Between Monopsonistic Influences: The Impact on Quits.

The one aspect of dominant plant personnel policy which is not subject to other monopsonistic pressures is the plant's quit rate. The only monopsonistic factor influencing quits remains the restricted availibility of alternative employment opportunities. This, however, may be an over-simplification of the issues involved, since it may be that dominant plants, to protect their investment in training, may pay a premium wage above the opportunity rate thereby further reducing potentially wasteful turnover. Therefore, under certain circumstances, dominant plant training policies will indirectly serve to further reduce quits. This tendency reinforces the original hypothesis regarding the effect of monopsony on dominant plant quit rates. (33)

<u>The Interrelationships between Monopsonistic Pressures: Overall Conclusions</u>. In conclusion, it should also be recognised that the interrelationships and consequent interaction effects operating between the component parts of dominant plant personnel policy restricts the extent to which the overall impact of monopsony may be predicted, identified and quantified. Moreover, as plant personnel policy is determined simultaneously it will be very difficult to accurately determine the principal causal factors influencing dominant plant personnel policy. At an empirical level, therefore, pragmatic considerations dictate that it will only be feasible to identify broad trends in dominant plant personnel policy by tracing the principal factors influenced by monopsony, and investigating the manner in which dominant plants react to these LLM pressures. This approach is justifiable as there are no theoretical reasons to support a single theory of monopsonistic behaviour. That is, given the different options open to employers when faced with monopsonistic conditions different plants may react in different ways. Similarly, plants may vary their policies over time in response to changes in the variables affecting their decision making process.

---

(33) Although dominant plants may pay a low wage this is relative to otherwise similar competitive LLMs and as such should not influence the quit rate which is determined largely by intra-LLM considerations.

CHAPTER 3

THE IMPACT OF MONOPSONY ON DOMINANT PLANT BEHAVIOUR: AN EMPIRICAL ANALYSIS

1. INTRODUCTION

This Chapter presents the results of the empirical investigation into dominant plant personnel policy by testing the propositions developed in Chapter 2 against the data collected from the dominant plant and control group questionnaire returns (see Appendix 3). Based on the standard monopsony model, which has been enhanced to identify the operational characteristics of monopsony, the analysis attempts to provide an explanation of the impact of dominance, bearing in mind the constraints imposed upon the analysis by the limited statistical base and the occasionally indeterminate and complex theoretical predictions. In the Chapter each of the major features associated with dominance is discussed in turn firstly by summarising the hypothesis being tested and then by examining the evidence for and against each proposition. The final section in the Chapter draws together the empirical evidence in an attempt to quantify the overall impact of monopsony on dominant plant personnel policy.

Before analysing the questionnaire returns it is perhaps advisable to briefly reiterate the steps associated with developing an adequate control group since this will have an important bearing on the way in which the empirical results are interpreted and the level of confidence associated with the conclusions based on the responses. Key differences between the dominant plant and the control group plants were examined in Appendix 3, and the principal conclusions developed there are summarised in Figure 3.1.

As the Figure shows there are four potentially important differences between the two samples and these are; differences in LLM size, differences in geographical location, differences in industrial structure and differences in the unemployment rate. As a result when analysing the results, and in particular trying to isolate monopsonistic pressures, an attempt should be made to take into account these additional influences. However, this will not always be easy since the available evidence on the differences between the two groups is, in part, contradictory and hence it is difficult to decide conclusively how best to control for these additional factors. Another major drawback to introducing effective controls is the lack of information of either a sufficient quantity or sufficient quality on some of the LLM variables under examination. Unfortunately, apart from recognising this as a problem there is little that can be done to improve the available statistics. As a result of all of these factors the only sensible way to proceed is to examine the evidence related to each aspect of personnel policy on a pragmatic basis whilst bearing in mind how these qualifications may modify the study's conclusions.

2. THE RELATIONSHIP BETWEEN MONOPSONY AND DOMINANT PLANT WAGES AND EARNINGS

One of the fundamental predictions of the monopsony model was that the wage rate in a monopsonistic or quasi-monopsonistic plant will be lower than the level experienced by otherwise similar plants operating in competitive markets. The dominant plants upward sloping labour supply curve lies above the average wage cost curve and therefore the equilibrium cost of labour is reduced below the competitive rate.(1)

The attempted identification of the effect of monopsony on plant remuneration was undertaken in three stages. Firstly, broad comparisons were made between hourly wage rates for similar work groups in dominant and non-dominant plants. Secondly, the total earnings differential between dominant and non-dominant workers was examined so as to incorporate the influence of overtime,

---

(1) This hypothesis is subject to qualification due to possible secondary monopsony effects (see Chapter 2). However, in broad terms it would appear that the weight of theoretical considerations suggests that wages in the dominant plant will remain below their competitive equivalent.

shift-premia, and other incentive related payments. Finally, and in view of the limited nature of the quantitative data, a qualitative analysis of dominant plant managements' perception of their position in the inter-LLM and inter-industry earnings leagues was undertaken.(2)

Testing the monopsonistic propostions on dominant plant wages and earnings is a difficult exercise since, in association with the considerable statistical problems inherent in the research, there are numerous variables besides monopsony which combine to determine the level of plant wages. For an indication of the number of variables involved, see Sawyer (1973) and Hood & Rees (1973).Given the limited number of dominant plant and control group returns it is not possible to standardise for all these potentially important wage determinants. Accordingly, in trying to identify the impact of monopsony only a relatively crude comparison of wages and earnings between the dominant plant and control group samples is feasible, and only then after considerable qualification.

Table 3.1 shows the reported average hourly wage for the dominant plant and control group for the three skill groups identified in the questionnaire. The results indicate that in all three cases the average hourly wage rate is lower in the dominant plant sample. The largest difference is for female manual workers where the basic wage of the control group is 12.5% higher than the average for the dominant plant sample. This difference is significant at a 95% level of confidence. For skilled male manual workers the difference is 7.3% which is also significant at the 95% level. For other male manuals the difference is 4.4% but this is not significant at any meaningful level of confidence. Consequently, for two out of the three skill groups the results are consistent with the hypothesis that monopsony has a depressing influence on wages.

---

(2) The qualitative analysis also set out to identify the most important determinants of wages in the dominant plant in order to assess the perceived importance of monopsony to the dominant employers when formulating wage policy and reacting to wage demands.

TABLE 3.1 AVERAGE HOURLY WAGES IN THE DOMINANT PLANT SAMPLE AND CONTROL GROUP

	AVERAGE HOURLY WAGES (PENCE)		
SKILL GROUPS	DOMINANT PLANTS	CONTROL GROUP	% DIFFERENCE IN HOURLY WAGE
Skilled Male Manuals	160	171.8	7.3% **
Other Male Manuals	138.7	144.9	4.4%
Female Manuals	126.0	140.5	12.5% **

NOTE: (i) ** equals significant at the 95% level of confidence on one tailed t-test

TABLE 3.2 WAGES IN HIGH AND LOW DOMINANCE PLANTS

Dominant Plant Grouping	Average Hourly Wages (Pence)		
	Skilled Male Manual **	Other Male Manual *	Female Manual
High Dominance Plants	151	133	126
Low Dominance Plants	170	144	125

NOTE (i) ** signifies differences significant at 95% confidence level
(ii) * signifies differences significant at 90% confidence level

As suggested previously, the data on hourly wages may be subject to a number of other influences besides monopsony which may also serve to reduce wages in the dominant plant sample. In an attempt to overcome these problems and further isolate the impact of monopsony the differences between wages in "high" and "low" dominance plants (see Table 3.2) and between coal and steel and other dominant plants (see Table 3.3) were examined.(3) The results in Table 3.2 show that there is a tendency in the skilled male manual and other male manual groups for high dominance plants to pay less than low dominance plants. In the case of skilled male manuals the difference is significant at the 95% confidence level, and for other male manuals it is significant at the 90% level. The small difference between the female manuals is not significant. These figures, therefore, are also consistent with the hypothesis that monopsonistic pressures depress wages downwards. The results in Table 3.3 suggest that for male manuals the lower wage in the dominant plant sample is not due to the concentration in coal and steel plants. For skilled male manual workers wages are significantly higher in coal and steel plants, whereas for other male manuals there is no significant difference between the two sets of figures. The results for female manuals are different. In this case female wages are significantly lower in the coal and steel industry and this may partly help explain why female manual wages are significantly lower in the dominant plant sample when compared to the control group.

Focusing exclusively on dominant plant and control group hourly wage rates may distort the true extent of overall differences between the two samples as the hourly wage rate does not adequately reflect a plant's total benefit package. In many cases basic rates will be extensively supplemented by additional incentives such as overtime payments, shift-premia and payments related to output. The

---

(3) High dominance plants were defined as establishments employing over 22.5% of the LLM population, and low dominance plants as employing between 12.5% and 22.5% of the LLM. The distinction between steel and coal plants and the non-nationalised industries was made because the dominant plant sample is biased towards this group and it was felt this may hide or override monopsonistic influences if personnel policy decisions were made centrally.

TABLE 3.3 DOMINANT PLANT WAGES: DIFFERENCES BETWEEN COAL AND STEEL PLANTS AND OTHER INDUSTRIES

Dominant Plant Grouping	AVERAGE HOURLY WAGES (Pence)		
	Skilled Male Manual *	Other Male Manual	Female Manual **
Coal & Steel Plants	179.8	141.8	99.0
Other Plants	156.8	138.2	131.6

NOTE: (i) * equals significant at the 90% confidence level
(ii) ** equals significant at the 95% confidence level

TABLE 3.4. THE NATURE AND EXTENT OF SUPPLEMENTARY WAGE PAYMENTS IN QUESTIONNAIRE RESPONDENTS

EARNINGS COMPONENT	DOMINANT PLANT SAMPLE			CONTROL GROUP		
	SMM's	OMM's	FM's	SMM's	OMM's	FM's
ELEMENT FOR OVERTIME	49	49	22	62	50	42
ELEMENT FOR SHIFTWORK	62	68	30	46	42	33
ELEMENT RELATED TO PAYMENT-BY-RESULT	54	59	35	71	54	54
NO. OF OBSERVATIONS	37	37	37	24	24	24

NOTE: (i) the figures relate to the proportion of each sample which offer a particular supplement to the hourly wage rate.

significance of these payments is summarised in Table 3.4 which shows in percentage terms the number of plants in each sample offering payments in addition to the basic hourly rate. The data indicates that for both the dominant plant and control group samples there is considerable scope in many plants to increase earnings above the basic weekly wage-rate, particularly for other male manual and skilled male manual workers. The most important incremental earnings element varies between the two samples. In the dominant plant group it is shiftwork followed by an element related to payment by result. For the control group sample it is payment by result bonuses followed by overtime payments. However, the nature of the additional payments is not particularly important, the main point being that management has considerable scope to increase earnings above the level set by the wage rate.

Accordingly, to take account of these additional earnings components Table 3.5 incorporates the supplementary payments to employees giving an estimated level of total weekly earnings for each skill group. The figures indicate that although there appears to be a relationship between dominance and earnings in all skill groups the differences between the two samples are less pronounced than in the case of the wage rate calculations. A similar pattern (see also Table 3.5) appears when the differences between high and low dominance plants are considered, in that although the earnings differentials are in the predicted direction they are not statistically significant. Without more data on the nature of the earnings components it is difficult to establish why the difference between the dominant plants and the control group should be reduced once the additional elements of pay are introduced.

One possible explanation of the reduced differences may be as a result of unions bargaining for inter-plant comparability through these additional elements of pay. This argument is strengthened by the tendency for unions to generally be stronger in dominant plants (see Section 3.5).(4) Similarly, the lower differential may also

(4) See also Table 3.8 which indicates that unions do make comparisons between plants and LIM's.

TABLE 3.5 AVERAGE WEEKLY EARNINGS IN THE DOMINANT PLANT AND CONTROL GROUPS

	AVERAGE WEEKLY EARNINGS (£)	
SKILL GROUP	DOMINANT PLANTS	CONTROL GROUP
Skilled Male Manual	84.9	88.3
Other Male Manual	71.9	76.9
Female Manual *	58.1	65.3
SKILL GROUP	HIGH DOMINANCE	LOW DOMINANCE
Skilled Male Manuals	83.9	86.1
Other Male Manuals	71.1	72.8
Female Manuals	57.7	58.5

NOTE: (i) * equals significant at the 90% level of confidence.

be as a result of active management pressure to reduce inter-plant earnings differences as a means of simplifying a multiplant company's overall bargaining system.

Although looking at earnings levels presents the total payment offered by plants, it does not necessarily provide the most appropriate indication of whether dominant plants are influenced by monopsonistic pressures. Earnings tend to fluctuate considerably and are sensitive to short-run variations in demand and plant specific overtime and shiftwork payments. By contrast the hourly rate measure is not as susceptible to such changes and therefore may provide a more accurate indication of underlying LLM pressures. Consequently, although the apparent impact of monopsonistic pressures is not so pronounced when considering earnings, the difference between dominant plant and control group hourly wages is probably sufficient to indicate that dominant plants may in fact be influenced by such pressures.(5)

When trying to identify the impact of monopsony it is also important to take account of the extent to which earnings are locally determined since this, in part, will influence the freedom employers have to react to monopsonistic pressures. For the dominant plant and control group sample the situation is summarised in Table 3.6 which shows, for the three skill groups under review, to what extent each element of total earnings is determined locally. The figures indicate that although earnings in the control group are generally determined at plant level there is still sufficient flexibility within the dominant plant group to allow management to react to monopsonistic pressures. This is

---

(5) One element of the benefit package not yet discussed, but where dominant plants appear to offer better provision than the control group, is in the provision of fringe benefits. As Table 2 in Appendix 17 shows, 70% of dominant plants stated that they offered more extensive fringe benefits than other firms. This compares with only 30% in the control group sample. This tendency may well reflect the more paternalistic nature of the dominant plants (see Norris, 1976). Unfortunately, the paucity of the data and the complexity of the fringe benefits makes it difficult to accurately quantify this effect and therefore estimate whether it compensates for other factors.

TABLE 3.6 THE PROPORTION OF DOMINANT AND CONTROL GROUP PLANTS WHERE EARNINGS COMPONENTS ARE DETERMINED LOCALLY

ELEMENT OF PAY STRUCTURE	DOMINANCE PLANT SAMPLE (% of plants)			CONTROL GROUP (% of plants)		
	SMM	OMM	FM	SMM	OMM	FM
Basic Rate	43	51	49	70	70	70
Overtime Rate	30	27	27	35	35	35
Shift Premia	30	27	27	43	48	43
Production Bonuses, Incentive Bonuses, PBR	68	70	68	78	78	78
Total Number of Observations	37	37	37	24	24	24

particularly true in the case of the basic wage rate and bonuses related to production.[6] In addition to this, it should also be remembered that although earnings may be centrally determined, this does not necessarily imply that headquarters' staff will not take into account local conditions and therefore monopsonistic considerations. This view was supported when a comparison was drawn between plants whose wages were determined locally and those where wages were negotiated nationally. In both cases, and for all skill groups, the apparent monopsony effect was equally strong in the nationally determined sub-group.

Although the result of the quantitative analysis on balance appears to be consistent with the original monopsony hypothesis the figures have to be treated with caution. Since the samples are small it is difficult to adequately standardise for the effect of other variables, including either occupational differences or variations in labour quality within a specific skill group. Similarly, locational and industrial differences and variations in general demand are not included in the analysis and this may also threaten the validity of the the results. More specifically, since the dominant plant sample appears to be concentrated in the assisted areas and in more depressed areas this may in part explain the relatively low level of wages and earnings in that group. Nonetheless, there is no evidence to suggest that demand pressures, as measured by LLM unemployment rates, are lower in the dominant plant group.

A further drawback associated with the statistical approach to wage and earnings comparisons is that it does not take account of whether the sample plants have incorporated current wage-round agreements into their earnings estimates.[7] To overcome this problem Table 3.7

---

(6) Note that the relatively high elements of local flexibility may partly explain why the differences between the dominant plant and control group samples is higher for wages than earnings. Note also that the more centralised wage determination policies followed by the dominant plant samples may in part reflect the non-local wage determination policies followed by the coal and steel industries.

(7) This may tend to push dominant plant wages downwards as many of the establishments are located in relatively small self-contained LLMs isolated from major industrial areas where the settlement and diffusion of wage settlements may be faster.

TABLE 3.7 QUALITATIVE INTRA-INDUSTRY ANALYSIS OF EARNINGS LEAGUE POSITION FOR DOMINANT PLANTS

Position in Earnings League	DOMINANT PLANT SAMPLE		
	Skilled Male Manuals (%)	Other Male Manuals (%)	Female Manuals (%)
Amongst the highest	9	9	9
Above average	23	21	25
About average	41	44	50
Below Average	18	18	6
Amongst the lowest	0	0	0
Don't know	9	8	9
Total Number of observations	34 (100)	34 (100)	32 (100)

NOTE (i) No significant CHISQ differences recorded presents a qualitative and more subjective analysis of dominant plant earnings relative to other plants operating in the same industry but in a different location.[8] The results for all skill groups indicate that there is a wide variation in perceived levels of earnings between dominant plants and other compatible employers. However, a significant proportion of dominant plants consider that they pay about average for the industry. This may at first appear to refute the monopsony hypothesis. However, considering that the dominant plants are probably well above the average size of plant in the industry, and this influence will probably push their earnings upwards (see Chapter 4), the qualitative analysis whilst not directly supporting the monopsony hypothesis does not refute it.[9]

In addition to both qualitative and quantitative attempts to identify monopsonistic pricing policies through the direct comparison of wages and earnings in broadly compatible plants the questionnaire also sought to identify monopsonistic influences by asking employers to rank the most important determinants of earnings. The results of the exercise are presented in Table 3.8.[10] From the table the most important influences on plant

---

(8) The plant's assessment of its position in the earnings league is not totally subjective as many plants are well informed about earnings relativities. For example, as Table 3 in Appendix 17 shows 50% of dominant plants carried out wage surveys into firms operating in the same industry outside the LLM and many others collected similar information from trade association data.

(9) Unfortunately, given the nature of the questionnaire it is not possible to explicitly introduce size and therefore develop more meaningful comparisons. As a proxy though, and as Table 5.1 in Chapter 5 shows, within the LLM a lot more dominant plants consider themselves to be above the market wage rate when compared to smaller firms. Although not reported, note also that the control group earnings tend to be slightly more biased towards the top of the earnings league. The same applies when the dominant plant group is split into low dominance and high dominance sub-groups (see Appendix 20 Table 1). However, in both cases the differences are insignificant.

(10) The determinants of earnings in the control group are also broadly similar. Note also that in this and other statements the respondents were asked to mark how important a particular factor was according to a loosely defined index running from "very important" to "not important". This will have been subjectively answered and therefore introduces a degree of imprecision into the results.

TABLE 3.8 THE PRINCIPAL DETERMINANTS OF EARNINGS IN DOMINANT PLANTS

	IMPORTANCE OF EARNINGS DETERMINANTS					
DETERMINANT OF EARNINGS	VERY IMPORT. (%)	IMPORT. (%)	QUITE IMPORT. (%)	OF LITTLE IMPORT. (%)	NOT IMPORT. (%)	NO. OF OBSERV.
Labour recruitment and retention problems caused by the action of other plants in the area	9	18	21	23	29	37 (100)
The earnings of other firms competing in the same product market	15	15	12	24	33	37 (100)
Union pressure for comparability with other firms in the area	0	14	26	34	26	37 (100)
Union pressure for comparability with firms in the same industry but a different LLM	15	15	18	23	29	37 (100)
Union pressure for comparability with other plants in the same Company	24	18	24	12	21	37 (100)
Union pressure for comparability with other firms not in the same area or industry	0	3	10	38	48	37 (100)
Government incomes policy	85	12	6	0	3	37 (100)
The cost of living	35	32	11	3	5	37 (100)

NOTE (i) The figures in each cell relate to the percentage of the sample falling into each category.

earnings are, not surprisingly, government incomes policy and the cost of living, both of which are determined by macro-economic conditions. However, even at a more disaggregated level there is little evidence that monopsony is an important determinant of earnings. The only factor specified in the table where monopsony may have an influence is in union behaviour. That is, dominant plant unions when tryng to influence wages tend to make comparisons with industry rates and those of other plants in the Company. By contrast (and although for brevity the results are not shown in the table) control group plants tend to make comparisons within the LLM. A tactic few dominant plants favour.(11)

In conclusion, it appears that the quantitative evidence is by and large consistent with the hypothesis that monopsony depresses wages. This seems to be particularly true for the hourly wage rate estimates, both when the dominant plant returns were compared to the control group, and when the high dominance plants were compared to the low dominance plants within the dominated sample. Although the qualitative analysis is also largely consistent with the standard monopsony hypothesis the available evidence is not as conclusive. Despite the consistency of these results they cannot be accepted without major qualifications regarding the accuracy of the data and the adequacy of the controls.

3. THE RELATIONSHIP BETWEEN MONOPSONY AND DOMINANT PLANT LABOUR SHORTAGES

A second basic proposition of the original monopsony model was that monopsonistic plants will inherently face labour shortages since the inelasticity of the labour supply curve leads to job vacancies in situations of plant wage equilibrium. Labour shortages will become particularly evident when labour demand is high and the inelasticity of the labour supply curve becomes more pronounced. (12) In practice, however, this statement has to be

---

(11) In this case the differences are significantly different from the control group at the 95% confidence level, and this does not seem to reflect structural differences between the two samples.

(12) This statement may be difficult to reconcile with the dominant plant offering the highest level of wage within the LLM (see Chapter 5). However, as dominant plants also tend to recruit workers of the highest quality the apparent contradiction is at least partly resolved.

significantly qualified to take account of both the indirect impact of other monopsonistic pressures and the dominant plant's response to LLM supply inelasticities. The net result being that, a priori, it is not possible to establish theoretically whether dominant plants will face persistent labour shortages.

To some extent the proposition that dominant plants will face labour shortages is borne out by the questionnaire evidence as Table 3.9 illustrates. As expected, and on the basis of previous research, the most serious shortages appear in the skilled male manual group, with 79% of the dominant plant sample experiencing skill shortages over the past two years. However, the figures for the other work groups are significantly lower with only 27% of the plants experiencing a shortage of other male manual employees, and 11% of plants reporting a shortage of female manuals. The latter results reflect the depressed state of the UK labour market and the relative abundance of unemployed semi-skilled and unskilled labour.

In relative terms, and despite the widespread dominant plant shortage of skilled male workers and the intermittent recruitment difficulties for other work groups, shortages are surprisingly more acute in the control group of non-dominant plants (see Table 3.9). For skilled male manual workers 83% of the control group experienced shortages over the previous two years. For non-skilled male manuals the figure was 40% and for female manuals the proportion fell to 20%. Therefore, in all three categories shortages were more prevalent in the control group plants. These differences, however, were not significant at any meaningfully high confidence level. A similar pattern emerges when the differences between the high and low dominance sub-groups are concerned in that shortages are more prevalent in the low dominant group (see Table 3.10), although these differences are again not statistically significant.

Reinforcing the pattern of more acute shortages in the control group, Table 3.11 shows that the skill shortages also appear to be of a more persistent nature in the control group. This is especially evident in the case of skilled workers where 90% of the control group plants suffered from long-term skill shortages compared to 61% of the dominant plant respondends. This difference

TABLE 3.9 THE IDENTIFICATION OF SKILL SHORTAGES FACED BY PLANTS IN THE PREVIOUS TWO YEARS

Recruitment Difficulty	Dominant Plant Group			Control Group		
	SMM	OMM	FM	SMM	OMM	FM
Proportion of Plants experiencing no difficulty	22	73	78	17	60	80
Proportion of Plants experiencing some difficulty	79	27	11	83	40	20
Total No. of Observations	37 (100)	37 (100)	33 (100)	24 (100)	20 (100)	20 (100)

TABLE 3.10 LABOUR SHORTAGES: THE DIFFERENCES BETWEEN HIGH AND LOW DOMINANCE SUB-GROUPS

RECRUITMENT DIFFICULTY	HIGH DOMINANCE			LOW DOMINANCE		
	SMM	OMM	FM	SMM	OMM	FM
Proportion of Plants experiencing no difficulty	25	69	93	19	76	83
Proportion of Plants experiencing some difficulty	75	31	7	81	24	17
Total Number of Observations	16 (100)	16 (100)	15 (100)	21 (100)	21 (100)	18 (100)

NOTE: (i) No significant differences between the two samples were identified.

TABLE 3.11 THE PERSISTENCE OF SKILL SHORTAGES

Nature of Shortages	Dominant Plant Sample			Control Group		
	SMM*	OMM	FM*	SMM*	OMM	FM*
Proportion of plants experiencing temporary shortages	32	25	8	5	26	28
Proportion of plants experiencing persistent shortages	61	18	0	90	26	6
Proportion of plants experiencing no recruitment difficulty	6	57	92	5	47	67
Total No. of Observations	31 (100)	28 (100)	25 (100)	20 (100)	19 (100)	18 (100)

NOTE (i) * denotes differences significant at the 90% level of confidence.

is significant at the 90% confidence level. This pattern is supported, although not to the same extent, by the results for the other two groups. Just over 52% of the non-dominant plants suffered from some form of shortages for non-skilled male manuals compared to 43% in the dominant plant sample. Similarly, 33% of this group reported persistent or temporary female manual shortages, whereas only 8% of the dominant plants faced this problem.(13)

There are several possible explanations of why the control group sample has experienced more serious labour shortages when compared to the dominant plant group. One possible reason may be that the level of unemployment is lower in non-dominated LLMs, and therefore the more difficult it is to recruit under these circumstances. Unfortunately, accurate unemployment data for the control group of LLMs was not readily available to establish conclusively whether this may have had a bearing on the impact of shortages. Nonetheless, using the regional proxy adopted in Fig A 3.9 of Appendix 3 it does not appear to be the case that demand is lower in the dominant plant group. However, and counter to this, the industrial and locational structure of the questionnaire respondents does support the idea of higher level of demand in the control group sample as the dominant plants are concentrated to a greater extent in declining industries and regions (see Appendix 3).

Another reason why dominant plants appear to suffer less from labour shortages is that their quasi-monopsonistic position within

---

(13) One possible reason why skill shortages may be less prevalent in the dominant plant sample relates to the size distribution of plants in LLMs. In quasi-monopsonistic LLM s the dominant plant, because of its relative size, will tend to pay a relatively high wage rate (see Chapter 4 and also Bronfenbrenner, 1956). This in turn will attract workers towards the large dominant plant and help reduce the extent of labour shortages in the plant. The labour shortages, therefore, will be transmitted to the smaller, lower wage plants within the LLM. By contrast, in more competitive LLMs there is no reason to suggest that the control group plants are also LLM wage leaders. Accordingly, the same pattern need not be repeated and shortages will not necessarily be alleviated. That is, inter-LLM differences in the plant size hierarchy may produce differences between dominant plant and control group behaviour which will help explain the different shortage levels.

the LLM probably allows them to plan their manpower strategy within an environment where they can exercise a significant amount of influence. In particular, dominant plants can probably implement their labour market policies without the immediate threat of serious competition for manpower, or the disruption of their plans by equally powerful neighbours.[14]

A paternalistic attitude towards workers, which may be another trait of dominant plant management, is another possible explanation of the relatively low level of shortages in dominant plants.[15] That is, the dominant plant philosophy may be to provide additional security to the workforce whilst reducing the high level of alienation commonly associated with large plants. As a result of this policy the dominant plant working environment may be enhanced and the tendency towards labour shortages subsequently reduced. Unfortunately, owing to the sensitivities of the issues involved it was difficult to collect information on the relationship between paternalism and dominant plant management philosophy. Indeed where this was attempted in the questionnaire the responses were not of sufficient quality to analyse with any confidence.

Although dominant plant and control groups both suffer from labour shortages this may reflect quite different pressures, as the prior investigation into the differing levels of shortages suggests. Accordingly, when the causes of labour shortages are examined in more detail it may be that monopsonistic pressures are more prevalent within the dominant plant sample although they are not necessarily manifested in more acute shortages.

The principal causes of labour shortages in the dominant and control group plants are summarised in Table 3.12.[16] Not

---

(14) Shortages in dominant plants may also be alleviated if plants develop close ties with the local Job Centre. This aspect of dominant plant behaviour is examined in more detail in the section in this chapter on recruitment.

(15) See Norris (1976) for a summary of the arguments. Note also from the previous section on earning that dominant plants seem to offer a higher level of fringe benefits both in relation to the LLM and the control group.

surprisingly the two most important causes of labour shortages within the dominant plant category are: a general rise in the level of demand for the shortage category, cited by 46% of the respondents as a very important cause of recruitment difficulties; and the poor quality of the unemployed, a very important cause of recruitment problems in 42% of cases. However, and of more interest and relevance, are the secondary causes of labour shortages identified by the respondents as this is where the consequences of dominating the LIM begin to emerge more clearly. In particular, the third most important cause of labour shortages for dominant plant is the constraining influence of the small size of the LIM, a factor mentioned by 33% of the plants as a very important contribution to labour shortages. In addition, other factors more indirectly associated with monopsony also appear to be important determinants of labour shortages. For example, local firms not contributing sufficiently to training was cited as a factor contributing to shortages by 31% of respondents.(17) Similarly, 21% of dominant plant employers found that shortages were generated by employees attracted to other LIMs by higher wages. One factor associated with monopsony which had little impact on shortages was any difficulty associated with the journey to work, as this was only mentioned by the dominant plant respondents as an important contributing factor in 13% of the cases.(18) To some extent, therefore, these

---

(16) To explain the relative importance of the different reasons for shortages the table illustates on an index of one to five the relative importance of the potential explanations of the observed labour shortages. It should be borne in mind, however, that the interpretation of the index by the respondants must again be subjective. Therefore, within the framework of a questionnaire it is not possible to devise a completely accurate and objective interpretation of the cause of labour shortages. Nonetheless, the figures in the table should provide sufficiently unambiguous and accurate answers to the principal cases of dominant plant recruitment problems.

(17) See Chapter 3, Section 3 for a summary of the hypothesis involved here.

(18) All other non monopsonistic "very important" determinants of labour shortages were ranked as follows: the anti-social hours involved in working in dominant plants 32% of respondants; labour attracted away by other LIM employers, 23% of respondents; and housing problems, 17% of the repondents. All other explanations of labour shortages were of minor importance.

figures support the hypothesis that quasi-monopsonistic conditions do induce labour shortages within dominant plants.

In analysing the data for the control group the explanations of shortages are broadly similar (see also Table 3.12), although a more detailed examination of the figures indicates that monopsonistically induced shortages are not as prevalent in the control group.(19) The level of demand and the low quality of the unemployed are again the most important causes of labour shortages. Similarly, the secondary causes of recruitment difficulties are broadly the same as identified in the dominant plant group. However, in all cases where shortages may be either directly or indirectly attributed to monopsony their impact is stronger in the dominant plant sample. In more specific terms the dominant plant sample suffer more from shortages caused by employees attracted away from the area by higher pay; the small size of the LLM; the tendency for some firms not to contribute sufficiently to training; and the journey-to-work difficulties posed for potential employees. However, on an isolated basis the extent of these differences between the two groups are not statistically significant. Therefore, the impact of monopsony does not provide either an important or distinguishing explanation of labour shortages in dominant plants. This is not really surprising given the small size of the samples and the tendency for monopsonistic considerations to be swamped by other factors.

In support of the results presented in Table 3.12, Table 3.13 summarises the causes of recruitment difficulties but this time analyses the high dominance and low dominance sub-groups separately. The results are broadly the same as the preceding analysis with monopsonistic influences relegated to secondary causes of recruitment difficulties. Nonetheless, once again the figures show that monopsonistic pressures appear to be marginally stronger in the high dominance sub-group, although the results are again not statistically significant.

---

(19) This is even more surprising considering that the extent of the shortages are at least as high in the control group and hence if anything this should have made the use of all recruitment methods more intensive in the control group.

13 THE EXPLANATION OF RECRUITMENT DIFFICULTIES: DIFFERENCES BETWEEN HIGH AND LOW DOMINANCE SUB-GROUPS

LABOUR SHORTAGES	HIGH DOMINANCE SUB-GROUP						LOW DOMINANCE SUB-GROUP						
	V IMPT		QUITE IMPT		NOT IMPT	TOTAL NO OF	V IMPT		QUITE IMPT		NOT IMPT		TOTAL NO OF
	1	2	3	4	5	OBS	1	2	3	4	5		OBS
s attracted n area by high pay	23.1	0	0	23.1	53.8	13 (100)	5.9	11.8	17.6	23.5	41.2		17 (100)
s attracted other local s	15.4	7.7	30.8	7.7	38.5	13 (100)		5.9	17.6	41.2	29.4	5.9	17 (100)
ze of local arket	7.7	23.1	38.5	15.4	15.4	13 (100)		17.6	17.6	29.4	11.8	23.5	17 (100)
cal firms ributing to	8.3	16.7	16.7	16.7	41.7	13 (100)		17.6	17.6	11.8	17.6	35.3	17 (100)
trictions s to increase pply	0	0	0	8.3	91.7	12 (100)	11.1	0	0	5.6	83.3		18 (100)
e training local skill	0	8.3	0	16.7	76.0	12 (100)	0	0	0	12.5	87.5		16 (100)
tre training ed to local	8.3	8.3	16.7	8.3	58.3	12 (100)	0	0	6.2	12.5	81.2		16 (100)
ise in demand pe of	15.4	30.8	15.4	15.4	23.1	13 (100)	22.2	22.2	27.8	11.1	16.7		18 (100)
recruits orking in s	0	8.3	0	33.8	58.3	12 (100)	0	0	17.6	23.5	58.8		17 (100)
ives anti- rs	7.7	23.1	15.4	15.4	38.5	13 (100)	10.5	21.1	15.8	21.1	31.6		19 (100)
are unfit for	0	0	9.1	27.3	63.6	11 (100)	11.8	5.9	17.6	11.8	52.9		17 (100)
are of ty	0	54.5	25.0	16.7	8.3	12 (100)	10.5	45.5	36.8	15.8	10.5		19 (100)
tract new ecause of roblems	15.4	7.7	0	38.5	38.5	13 (100)	0	11.8	11.8	5.9	70.6		17 (100)
o work for employees	15.4	7.7	7.7	38.5	30.8	13 (100)	5.9	0	11.8	23.5	58.8		17 (100)

the figures in each cell relate to the percentage of the sample falling into each category between the dominant plant and the control group. None of the differences between the two groups is significant

The policies adopted by dominant plants to ease recruitment difficulties to some degree also reflect the impact of monopsony on dominant plant behaviour. However, as with the earlier analysis, monopsonistic considerations do not feature prominently in the employers' strategy for easing labour shortages. Table 3.14 shows that the principal methods employed to ease recruitment difficulties are: the use of more overtime, preferred by 68% of firms; investment in labour saving equipment, used by 57% of firms; increased apprentice recruitment also favoured by 57% of firms; and training, used by 54% of firms. None of these policies relates directly to the impact of monopsony on shortages.[20] Despite these results, policies geared to overcome monopsonistic recruitment difficulties, that is problems caused by the inelasticity of the firms labour supply curve, were used more frequently by the dominant plants when compared to the strategies adopted by the control group. This applied to actively attracting employees from outside the local area, using the Employment Transfer Scheme, and transferring employees from other branches of the company. However, although the nature of the effect was in the predicted direction the size of the effect in each case was statistically insignificant.[21]

To summarise the results of the analysis into labour shortages it would appear that the evidence to some extent refutes the original hypothesis that labour shortages will be more serious in quasi-monopsonistic LLMs. That is, although labour shortages are often present in dominant plants they are relatively more serious in the control group. However, this need not refute the hypothesis that dominant plants inherently face labour shortages, rather the observed pattern may reflect other differences between the dominant plant and control group sample. Alternatively, it may suggest that the dominant plants are in fact better able and more experienced in

---

(20) These policies are generally favoured by employers since they are flexible, reversible, relatively inexpensive and generally produce a relatively quick reduction in shortages facing the employer.

(21) Distinguishing between high and low dominance sub-groups there is also a tendency, although it is again not statistically significant, for the high dominance groups to favour easing recruitment by trying to reduce the labour supply curves in elasticity.

TABLE 3.14 THE METHODS ADOPTED TO EASE RECRUITMENT DIFFICULTIES

	Percentage of Sample Adopting Method to Ease Recruitment Difficulty	
Method used to ease recruitment difficulties	Dominant Plant Sample	Control Group
Increasing apprentice recuitment	57	58
Increasing training in firm	54	75
Upgrading less skilled employees	43	54
Reducing standards required by recruits	13	4
Subcontracting work	43	33
Investing in labour saving equipment	57	54
Using more overtime	68	50
Using part-time employees	22	12
Using seasonal or temporary employees	19	29
Using retired employees	11	21
Transferring from other branches of the company	19	12
Increasing relative earnings for particular groups	13	25
Improving working conditions	40	46
Attracting employees from outside the local area	43	37
Using the Employment Transfer Scheme	24	21
Others	8	0

NOTE (i) None of the differences between samples are significant at the 95% level of confidence.

coping with labour shortages.[22] The available evidence on the underlying causes of plant shortages and the methods adopted by the employers to overcome these shortages both to some extent support this contention, although because of statistical and data limitations it is not possible to demonstrate this conclusively and without qualification.

4. THE RELATIONSHIP BETWEEN MONOPSONY AND DOMINANT PLANT RECRUITMENT METHODS

In theory monopsonistic considerations should also condition management's attitude and strategy towards recruitment (see Chapter 2, Section 3). In particular labour supply inelasticities will tend to force dominant plants to recruit outside the LLM. As a result, and in terms of available recruitment policies, practical considerations suggest that dominant plants will tend to favour advertising in the national press, notifying vacancies to Job Centres in other areas, and using the Employment Transfer Scheme. Despite this, however, it is not expected that monopsonistic influences need figure prominantly in the dominant plant's recruitment strategy. In the main, dominant plants, in common with other similar but non-dominated employers, will tend to favour relatively more passive and less expensive means of recruiting labour. Accordingly, monopsonistic influences on dominant plant recruitment should only constitute a secondary influence on the employers attitude towards hiring. Nonetheless, monopsonistic influences may become more important as labour market conditions tighten and employers are forced to adopt a more active and resource-intensive approach towards recruitment.

To identify and quantify the impact of monopsony on dominant plant behaviour, and in more general terms the overall recruitment strategy adopted by dominant employers, this section begins by presenting the questionnaire evidence on the principal recruitment policies used by dominant plant. Subsequently, the effect of monopsony is discussed explicitly by relating the questionnaire responses to the previously developed theoretical propositions. The

(22) See the sections in this chapter on dominant plant recruitment and training for further evidence on this.

effect of changes in the level of labour demand on dominant plant recruitment policy is also considered to establish whether the impact of monopsony fluctuates depending on conditions in the LIM.

4.1 General Recruitment Considerations

The recruitment methods adopted by the dominant plants in the six months prior to questionnairing are presented in Table 3.15.[23] In general the results support the hypotheses developed in Chapter 3 on the dominant plants' overall attitude towards recruitment. In particular, and as predicted, the table shows very clearly the importance to many dominant plants of passive recruitment methods when hiring each skill group. The most favoured methods used by the dominant plant were; recruiting on-spec applicants, drawing from a list of previous applicants, accepting recommendations from previous employees, and upgrading, training and transferring existing employees. Complimenting these methods on a more active formal basis the dominant plants also used advertising in the local press as an important recruitment channel for skilled male manual workers.[24] This pattern of recruitment by the dominant

---

(23) In this case "recruitment methods" means the approach adopted by the plant when hiring labour. Obviously it is not a perfect measure of a firm's recruitment policy since it does not measure either the success or intensity of the different options open. Nonetheless, it does seem a reasonable proxy to adopt given the purpose of the study.

(24) Perhaps one of the more surprising features of Table 3.15 is the unimportance of wages as a means of encouraging recruitment. One reason why there should be such a marked reluctance to use wage for recruitment is the operations of an incomes policy at the time of questionnairing which in effect severly restricted the ability of employers to improve their position in the wage hierarchy. Nonetheless, besides the impact of incomes policy there are other reasons why wages would not be considered as an effective means of recruitment and these include:

- the fear of initiating a wage spiral between competing employers.
- the possibility of disturbing sensitive plant wage differentials which may result in cumulative bidding and LIM instability.
- wages are an expensive recruitment method since the marginal cost of recruitment rises more rapidly than the supply price.
- wage negotiation procedures are usually subject to a decision making process outside normal considerations associated with recruitment.

For a more comprehensive discussion on this subject see Fogarty, (1965).

TABLE 3.15 AN ANALYSIS OF RECRUITMENT METHODS USED IN THE LAST SIX MONTHS

RECRUITMENT METHOD	Percentage number of Plants Using Recruitment Methods					
	Dominant Plant Sample			Control Group		
	SMM	OMM	FM	SMM	OMM	FM
Advertise in local press	70	24	19	75	46	42
Advertise in national press	27	3	3	17	0	0
Notify vacancy to local Job Centre/Employment Office	92	89	76	83	79	71
Notify Job Centres in other area	46	19	11	37	12	8
Use Employment Transfer Scheme	16	5	0	8	0	0
Contact Skill Centre	13	11	3	17	29	12
Contact schools/technical colleges	22	13	8	37	12	12
Use private employment agency	5	3	0	29	4	4
Take on-spec applicants	65	73	49	58	67	50
Use list of previous applicants	68	62	54	46	46	46
Contact former employees	19	16	16	17	12	21
Recommendation from existing employees	54	54	49	62	67	54
Upgrade/train/transfer existing employees	59	70	43	67	67	58
Offer higher earnings than other local employers	5	11	11	8	4	4
Other Methods	8	8	3	17	12	8

plants suggests that LLM conditions are relatively slack and there is little need to use more expensive recruitment policies to meet the company's requirements.

Another of the more striking features of the table is the different attitudes and levels of activity adopted by the dominant plants when recruiting different skill groups. In particular, for all the widely used recruitment methods the dominant plant sample recruits skilled male manual workers most actively, in that this is the group where each recruitment method is most used. Other male manuals are the second most actively recruited workers, with female manuals the least sought after group. For example, 70% of the dominant plant sample favoured advertising in the local press when recruiting skilled male manuals, whereas the proportion fell to 24% in the case of other male manuals, and for female manuals the figure was still lower at 19%. Referring back to the analysis of labour shortages this recruitment pattern probably reflects the variation in the extent of shortages felt by the dominant plant for the skill groups under consideration, and supports the hypothesis that an employer will recruit most actively where labour shortages are most acute.(25)

The principal recruitment policies adopted by the control group sample follow a pattern very similar to the methods adopted by the dominant plants, and indeed there are no statistically significant differences between the two groups. Again the accent is on recruiting skilled male manual workers where shortages are most prevalent. Similarly the control group also relies heavily on the same passive and relatively inexpensive methods of recruiting labour

---

(25) Bearing in mind the continued presence of labour shortages the evidence from the recruitment table shows that although the dominant employer uses specialised recruitment methods to overcome the problem of labour shortages this is not always totally successful. These results tend to support the contention of Devine (1969) (see Chapter 2) that although monopsonists may substitute non-wage costs to overcome labour shortages the characteristics associated with monopsony remain and continue to frustrate the dominant plant. For any combination of wage and non-wage hiring costs the resultant minimum average cost curve will still be positively biased with the associated MCC lying above it. The net result being that labour shortages and wages below competitive rates will continue to prevail.

whenever possible. This pattern is as expected given that the fundamental determinants of recruitment policy are the same for both the control group and the dominant plant samples.

4.2 Monopsonistic Considerations

Although the principal determinants of dominant plant recruitment policies do not in general reflect monopsonistic pressures this does not apply to the same extent to the secondary recruitment channels used by dominant plants. In this case, as Table 3.15 shows, the impact of monopsony is more in evidence. This is particularly true for skilled male manual workers where shortages are more prevalent and workers are correspondingly more difficult to recruit. The most popular recruitment channel used to overcome possible monopsonistic pressures and LLM supply inelasticities is the notification of job vacancies to Job Centres in other areas. For skilled male manuals 46% of dominant plants used non-local Job Centres to augment their labour catchment area. This proportion fell to 19% for other male manuals and to 11% for female manuals. The preference for this method of extending the LLM reflects the low cost associated with recruiting through the Job Centre. Advertising in the national press and using the Employment Transfer Scheme are additional, although less important, recruitment methods used by dominant plants to overcome LLM supply inelasticities.

In support of the hypothesis that monopsony influences dominant plant recruitment policies Table 3.15 also shows the extent to which the control group adopts recruitment methods able to extend their labour catchment area. In each case the control group plants make proportinately less use of recruitment methods which may help overcome monopsonistic constraints. However, the individual differences are not statistically significant, which is not really surprising given the limited sample size and the probability that the recruitment methods in question are not exclusively used to overcome monopsonistic pressures. The overall impact of monopsony is more clearly illustrated if the recruitment policies associated with dominance are aggregated as in Table 3.16. The table shows that when all monopsonistic policies are considered together the differences become more pronounced. This holds for all three skill groups but is particularly marked in the case of Skilled Male Manuals.(26)

TABLE 3.16 THE OVERALL IMPACT OF MONOPSONY ON DOMINATED PLANT RECRUITMENT

	Dominant Plant			Control Group		
	Skilled Male Manuals	Other Male Manuals	Female Manuals	Skilled Male Manuals	Other Male Manuals	Female Manuals
Use of Monopsonistically Based Recruitment methods	33 (30)	10 (9)	5 (5)	15 (21)	3 (4)	2 (3)

Note (i) The unbracketed figures are the total number of times monopsonistic methods are "used" to recruit workers.

(ii) The bracketed figures are calculated as proportion of the maximum possible use of each method.

Although the above evidence is consistent with monopsonistic pressures in some measure it could also be explained by the limited size and relatively high self-containment associated with dominated LLMs (see Appendix 2 and Chapter 2 Table 2.1). That is, these characteristics may well be the most important pressures forcing the dominant employer to recruit from outside the LLM. Nonetheless, on inspection these characteristics are really a different way of looking at the monopsony problem in that they both serve to generate labour supply inelasticities. Consequently, it would be potentially misleading to treat them as totally separate influences.

(26) Unfortunately, in aggregating the results in the manner shown it is not possible to test for statistical differences between the two samples.

Besides the more obvious impact of monopsony on recruitment methods it is also possible that monopsony influences the extent to which the dominant plant notifies vacancies to the Job Centre. Theoretically, as Chapter 2 suggests, the tendency to notify vacancies may result from pressures from both the dominant plant and the Job Centre. On the one hand the dominant plants may be encouraged to notify vacancies because, as the LLM's leading employer, it should be possible to develop mutually beneficial links with the Job Centre. The Job Centre on the other hand would also actively encourage the dominant plant to notify vacancies since the plant's position in the LLM ensures that it is a major source of employment and therefore placements from the unemployment register. However contrary to these arguments there is also the possibility that the absolute and relative size and independence of dominant plants may render the Job Centre redundant and hence such employers may tend not to use the services offered by the Job Centre

The evidence in Table 3.15 above suggests that the first hypothesis holds, since for all skill groups the propensity to notify vacancies is higher in the dominant plant sample. However, the differences are marginal and not statistically significant at any meaningful confidence interval. Supplementing the results of Table 3.15, Table 3.17 shows that although the Job Centres are perhaps more active in the dominant plant sample it would appear that they are not more successful in helping with recruitment than the Job Centres associated with the control group plants. Indeed, although the differences between the two groups are small the opposite seems to be the case with the control group Job Centres, being more successful in assisting the plants. Table 3.18 shows the nature of the specialised assistance received from the Job Centres to help overcome LLM shortages. Although the differences between the samples are statistically insignificant with respect to each type of assistance the figures indicate that the assistance given to the dominant plants is generally to help overcome problems associated with monopsony.

TABLE 3.17 THE EXTENT OF JOB CENTRE ASSISTANCE

	Number of Plants	
	Dominant Sample	Control Sample
Plants where Job Centre has been of assistance in filling vacancies	26 (70.3)	18 (75.0)
Plant where Job Centre has not been of assistance in filling vacancies	11 (29.7)	6 (25.0)
Total number of observations	37 (100)	24 (100)

TABLE 3.18 THE NATURE OF SPECIAL HELP FROM THE JOB CENTRE

NATURE OF ASSISTANCE	Proportion of Dominant Plants Involved	Proportion of Control Group Plants Involved
Circulation of vacancies to other Job Centres	19	17
Help with recruitment of particular type of workers	4	11
Help with the Employment Transfer Scheme	4	0
Helping with interviewing potential recruits	8	0
General help and advice	31	55
Special vacancy campaign	4	0
Exclusive service geared to the specific needs of the plant	8	0
Combination of assistance	23	17
Total	26 (100)	18 (100)

In particular a higher proportion of dominant plant Job Centres were involved in circulating vacancies to other Job Centres, helping with the Employment Transfer Scheme, and providing a service geared to the specific needs of the plant. In conclusion, therefore, it seems that although the level of association between the Job Centre and employers is no higher for the dominant plant sample it would appear that the nature of the help offered by the Job Centre to dominant plants primarily relates to overcoming problems associated with monopsony.

Theoretical considerations also suggest that as LLM conditions tighten employers place more emphasis on secondary recruitment methods since passive and largely informal strategies will fail to supply a sufficient number of recruits. That is, when LLM demand changes so too will the emphasis placed on active plant recruitment methods. To establish whether this holds for dominant plant behaviour and, consequently, whether the impact of monopsony is more pronounced in this environment the dominant employers were also asked to outline their recruitment strategy when the demand for labour was high. The results of this exercise are presented in Table 3.19. The data in the table confirms the general hypothesis that as the LLM tightens there is a change in emphasis in plant hiring practises away from standard recruitment methods and towards a more active and formalised system. For example, for skilled male manuals the use of each of the more formal recruitment methods increased markedly.[27] [28] This shift of

---

(27) See in particular the use of advertising both at local and national level, using the Employment Transfer Scheme, contacting Skill Centres, and using private employment agencies.

(28) The figues in Appendix 17, Table 4 also indicate that as the LLM tightens the dominant plant tends to use more hiring methods in its efforts to recruit. That is, it appears that the scope as well as the focus of the plants' attitude towards recruitment policy changes. This is true for all skill groups (the table also reflects the high level of labour shortages in the control group, in that this group tends on average, to employ more recruitment methods than the dominant plants). In terms of statistical testing, for the combined sample of both the dominant and the control group there are highly significant differences (95% confidence level) between:
(i) each of the skill groups and the other skill groups, and
(ii) within each of the skill groups but under different LLM conditions.
As a result, the hypothesis that the type of labour being recruited and the nature of the LLM environment makes a substantial difference to the importance of recruitment methods is supported.

emphasis in the dominant plant recruitment strategy also involves a marked increase in the use of recrutiment methods which would help to alleviate any monopsonistic pressure being felt by the plant. Relative to the strategy adopted under existing LLM conditions, Table 3.19 indicates that for skilled male manual workers the use of advertising in the national press has increased by 40%. Similarly under the tighter labour market conditions the number of plants notifying vacancies in non-local Job Centres increased by 12%.[(29)] Finally, the number of plants using the Employment Transfer Scheme rose by 67.1%.[(30)]

The recruitment policies followed by the control group when faced by a tight LLM environment were also analysed and the results are summarised in Table 3.19. In some respects the changes experienced in their recruitment policy are similar to those in the dominant plant sample, especially with respect to the shift from a less to a more formal recruitment strategy. However, an important difference between the two samples is that the shift in control group hiring strategy does not place such an emphasis on using recruitment methods which are consistent with overcoming monopsonistic pressures. It would appear that the preferred strategy for the control group is to concentrate on increasing the supply of labour from within the LLM. This is achieved principally by using local Skill Centres, increased contact with schools and technical colleges, and through the use of private employment agencies. Accordingly these results

---

(29) The number of dominant plants notifying vacancies to the local job centre did not increase which suggests that this method is an accepted strategy irrespective of LLM conditions. This has implications for the second major section of the research covered in Chapter 6 and Chapter 7; the analysis of LLM efficiency as defined by the UV ratio.

(30) Table 3.19 also indicates that in times of high labour demand the dominant plants reduce the extent they use passive and informal recruitment methods. This change of emphasis applies to hiring on-spec applicants, using a list of previous applicants, taking recommendations from existing employees, and up-grading and training existing employees.

Table 3.19 An Analysis of Recruitment Methods Used When Difficult to Recruit

	Dominant Plant Sample			Control Group		
Recruitment Method	Skilled Male Manuals	Other Male Manuals	Female Manuals	Skilled Male Manuals	Other Male Manuals	Female Manuals
Advertise in local press	81.1	54.1	35.1	95.8	75.0	66.7
Advertise in national press	37.8	18.9	8.1	37.5	12.5	16.7
Notify vacancy to local Job Centre/Employment Office	91.9	89.2	78.4	91.7	79.2	75.0
Notify Job Centres in other areas	51.4	29.7	21.6	45.8	25.0	10.7
Use Employment Transfer schemes	27.0	8.1	0	8.3	0	0
Contact Skill Centre	18.9	8.1	2.7	29.2	25.0	12.5
Contact schools/technical colleges	18.9	16.2	10.8	29.2	12.5	12.5
Use private employment agencies	10.8	0	0	33.3	8.3	8.3
Take on spec-applicants	59.5	62.2	48.6	50.0	41.7	37.5
Use list of previous applicants	64.9	62.2	51.4	62.3	54.2	50.0
Contact former employees	29.7	27.0	24.3	37.5	20.8	29.2
Recommendations from Existing employees	48.6	48.6	43.2	62.5	58.3	45.8
Upgrade/train/transfer existing employees	54.1	67.6	45.9	58.3	62.5	50.0
Offer higher earnings than other local employers	5.4	10.8	10.8	8.3	8.3	8.3
Other methods	10.8	10.8	5.4	12.5	8.3	4.2

Table 3.20 An Analysis of Recruitment Methods Used When Easy to Recruit

	Dominant Plant Sample			Control Group		
Recruitment Method	Skilled Male Manuals	Other Male Manuals	Female Manuals	Skilled Male Manuals	Other Male Manuals	Female Manuals
Advertise in local press	35.1	12.5	12,5	54.2	41.7	37.5
Advertise in national press	5.4	2.7	2.7	4.2	0	0
Notify vacancy to local Job Centre/Employment Office	78.4	81.1	70.3	62.5	66.7	58.3
notify Job Centres in other areas	8.2	8.1	8.1	8.3	4.2	4.2
use Employment Transfer Schemes	2.7	0	0	0	0	0
Contact Skill Centre	8.1	8.1	2.7	8.3	16.7	8.3
Contact schools/technical colleges	13.5	18.5	8.1	20.8	12.5	12.5
Use private employment agencies	0	0	0	4.2	4.2	4.2
Take on-spec applicants	51.4	56.8	45.9	62.5	66.7	54.2
Use list of previous applicants	54.1	48.6	40.5	41.7	45.8	45.8
Contact former employees	13.5	13.5	10.8	16.7	12.5	16.7
Recommendations from existing employees	45.9	51.4	45.9	62.5	66.7	50.0
Upgrade/train/transfer existing employees	45.9	62.2	43.2	37.5	41.7	29.2
Offer higher earnings than Other local employers	2.7	8.1	10.8	8.3	12.5	12.5
Other	5.4	5.4	2.7	8.3	8.3	8.3

tend to support the hypothesis that the LLM environment and structure will to some extent determine the recruitment policy adopted by employers.[31]

In contrast to the recruitment policies followed in tight LLM conditions, Table 3.20 summarises the policies adopted by dominant plants when LLM conditions are slack and unemployment correspondingly high. Once again the results confirm many of the predictions of labour market theory. Under conditions of weak labour demand relatively expensive recruitment methods become insignificant since when unemployment is high employer initiated and relatively active recruitment policies are both unnecessary and uneconomic. Instead, plants can rely almost exclusively, as the table shows, on applicants channeled through the Job Centre and on passive recruitment methods such as on-spec applicants and employee recommendations. Therefore, under these circumstances dominant plants do not employ monopsonistically orientated recruitment methods to meet their labour supply requirements as there will usually be significant labour within the LLM.[32] [33] Accordingly there are even smaller differences between dominant plant and control group recruitment methods when such LLM conditions prevail.

---

(31) Once again, in terms of CHI SQ , calculated on the individual recruitment methods, these differences are not statistically significant. However, it should be remembered that given these circumstances CHI SQ cannot be used to measure whether there are overall statistically significant differences between the dominant plants and the control group when all possible recruitment methods associated with monopsony are combined. Calculating an aggregate measure of the impact of monopsony under tight LLM conditions is shown in Appendix 17, Table 5. In this case the differences between the dominant plant and control group become more apparent.

(32) The one possible exception to this is in the use of Job Centres where for all skill groups dominant plants appear to make more use of the service provided.

(33) Table 4 in Appendix 17 also shows that the intensity of the plant's recruitment drive lessens as LLM conditions slacken.

4.3 Summary

Although monopsonistic considerations are not a primary feature of plant recruitment policy the impact of dominance seems to influence the plants' attitude towards secondary recruitment methods. That is, in relation to the control group, dominant plants tend to use to a greater extent recruitment methods which reflect the monopsonistic structure of their labour market. The differences between this dominant plant sample and the control group in this respect are, nonetheless, only marginal. These differences, however, increased when the plants were questioned about recruitment methods adopted in a tighter LLM situation where labour supply inelasticities probably become more acute and the emphasis on secondary and more active hiring policies is greater. In times of low labour demand monopsonistic considerations seemed to be of little importance to dominant plants. In this case labour supply inelasticities were not a constraint on recruitment and there was little need to hire from outside the LLM. As a result there were no meaningful differences between dominant plant and control group recruitment strategies under these conditions.(34)

5. THE RELATIONSHIP BETWEEN MONOPSONY AND DOMINANT PLANT TRAINING

The theoretical relationship between monopsony and training suggests that dominant plants will offer a relatively high level of training to employees, as measured on a per capita basis. The dominant plant's relatively high propensity to train is jointly associated with the hypothesised tendency towards specific rather than general training in quasi-monopsonistic establishments, and the relatively low quit rates which are also considered to be a characteristic of dominant plants. That is, the emphasis on specific training in dominant plants indicates that employers,

---

(34) Although the results are not presented here a similar recruitment pattern develops for all skill groups and LLM conditions if the dominant plant sample is divided into high and low dominance sub-groups, in that the high dominance group is more inclined to use monopsonistically induced recruitment methods.

rather than workers, finance investment in human capital. The employers subsequently recoup their costs by capturing thedifference between the workers' enhanced marginal product and their wage. Combining this with the low quit rate associated with dominant plants subsequently allows employers to take advantage of this differential over a longer time period thereby increasing their return. In response to this economic incentive, dominant plants will be encouraged to expand their training programmes until the marginal cost of per capita training equals the marginal return.(35)

Although the level of per capita training in dominant plants may be relatively high this need not imply that monopsony positively influences total plant expenditure on training. The net effect of monopsony on a plant's overall training level is a priori indeterminate since the influence of higher per capita training on the dominant plant's total training effort will be offset to some extent by the relatively low requirement to train new recruits. As a result, it is impossible to establish which of the conflicting effects will be the stronger, and the question has to be resolved empirically.

Testing the training hypotheses associated with monopsony and plant dominance ideally requires a substantial amount of detailed information well beyond the scope of an exercise based exclusively on questionnaire data.(36) Therefore, for practical reasons it

---

(35) Compatible establishments operating in more competitive LIMs are not subject to the same pressures to increase their level of training. This primarily reflects their relatively high quit rate but is also a direct implication of the greater importance of general training in the LIM which results in employer and employee training decision being influenced by a different set of economic considerations (for more details on this argument see Chapter 2).

(36) It was also felt that it may be counter-productive to ask questions on the nature of training, and whether the employer or employee-financed training, since many potential respondants may have doubted the motive behind such an enquiry.

was decided that it would be counter productive to establish detailed points, such as whether training was considered to be general or specific and, related to this, whether the employer or employee financed such investments. Similarly, it was felt that it would not be possible to accurately test whether monopsonistic presures had a differential impact on particular occupational groups. Instead, the analysis concentrated on the more fundamental and basic aspects of training and in particular quantifying the total and per capita training programmes offered by the dominant plants and the control group. In fact focussing on these broader aspects of training is not a serious problem when attempting to test the monopsonistic hypotheses as it remains possible to infer even from the general results a significant amount about how monopsonistic considerations influence training. Bearing this in mind the approach adopted in the analysis was to initially examine the establishment's overall approach to training and from this try and establish whether per capita levels were higher in the dominant plant sample. In particular, if it could be shown that the total training effort was higher in dominant plants and that quit rates were compatible to or lower than the control group then, *ceteris paribus*, this also implies higher *per capita* training levels in the dominant plants.

Table 3.21 provides some indication of the overal extent of training (as measured by the proportion of plants providing training for the work groups specified in the table) undertaken by the dominant plants and the control group.(37) The results suggest that, on balance, the dominant plants provide more training than the control group sample in that a higher proportion of monopsonistic establishments offer traning courses to the major categories of workers employed in the plant. In particular, the figures indicate that in six out of seven categories of manual employment the dominant plants offer training courses to a higher proportion of workers in the sample when compared to the control group

(37) It is worthwhile noting that the pattern of training within plants is, in some measure, predictable with the skill groups receiving more training than the semi-skilled and unskilled workers.

figures.[38] In all cases, however, the differences between the two samples are marginal and in terms of CHI SQ insignificant at any meaningful confidence level. Nonetheless, the fact that the bias is constantly in favour of the dominant plant sample does strengthen the suggestion that dominant plants provide more training in overall terms. This of course, assumes that the provision of training courses can be accepted as an adequate proxy for overall training levels in the plant.[39] Considering that labour shortages seem to be more prevalent in the control group the reported differences in the table may in fact conceal that larger discrepancies would have become more apparent in a controlled comparison.[40] It is also worthwhile noting that the largest differences in the provision of training courses between the two samples are in the low and semi-skilled groups. The key point here is that this is probably where most of the generally trained workers are concentrated, and this is the group which training theory predicts will be trained at the employer's expense only in a monopsonistic LLM. That is, although the table does not provide a measure of who bears the training cost this result does suggest that the dominant employers are more concerned with training these workers. Therefore, statistical evidence is consistent with the hypothesis developed in Chapter 2.

---

(38) Unskilled employees is the only work group where the prevalance of dominant plant training is exceeded by the control group. This can partly be explained by the relatively more serious shortage of skilled manual workers faced by the control group which may be sufficient to induce these plants to increase the level of training for lower skill groups.

(39) This pattern is repeated when high dominance and low dominance companies are analysed separately. That is, the high dominance companies appear to train more than the low dominance sub-sample.

(40) As Table 6 in Appendix 17 shows there are not significant differences between the use of external training courses between the dominant plant and the control group sample. Nor are there any significant differences between the high and low dominance sub-groups of the dominant plant sample.

TABLE 3.21 THE PROPORTION OF PLANTS PROVIDING TRAINING PROGRAMMES FOR DIFFERENT OCCUPATIONAL GROUPS

	Extent of Training	
Manpower Category	Dominant Plant Sample (%)	Control Group Sample (%)
Apprentices	97	96
Post apprentices	86	83
Skilled employees (non-apprentice)	89	79
Semi-skilled employees	89	75
Unskilled employees	65	46
Clerical employees	86	83
Technical staff	89	92
Supervisory grades	97	96
Management	92	96
None of these	3	4
Total No of observations	37	24

TABLE 3.22 THE NUMBER OF WORKERS PER FULL TIME TRAINER

	No of Workers per Trainer
Dominant Plant Sample	185
Control Group Sample	377

The pattern of training presented in Table 3.21 is in many respects repeated in Table 3.22 which measures the average number of workers per full-time training official in each of the two samples. Although the results can only give a limited indication of the emphasis each group puts on training the figures are revealing. Indeed the number of workers to trainers in the control group is over 100% higher than in the dominant plant sample. This difference is significant at a 90% confidence level. On a more qualitative basis data on the dominant plants' estimation of their position on the intra LLM training hierarchy (see Chapter 5, Section 4) also suggests that dominant plants train more than the control group. Again, however, the differences are not statistically different to the pattern generated by the control group.(41)

Although it cannot be demonstrated conclusively in view of the inadequacies of the data if it is assumed that the extent of courses and the number of training officers provided by the dominant plant and the control group reflects the overall level of training in the establishments, and that there are no significant differences in the quit rates between the groups (see Section 3.6) then this implies that <u>per capita</u> training is higher in the dominant plant groups. Under these circumstances, therefore, the available data also supports the original hypothesis developed in Chapter 2 that dominant employers will provide an above average level of training.

---

(41) It should also be noted that the figures do not take account of the size distribution of plants within the LLM, and therefore the table is not adequately controlling for variables such as plant size.

6. THE RELATIONSHIP BETWEEN MONOPSONY AND DOMINANT PLANT UNIONISATION

Theoretically it is difficult to establish the direction of monopsonistic influences on unionisation levels in dominant plants as pressures to organise are subject to a range of diverse forces which are difficult to quantify. On the one hand there are strong arguments to suggest that dominant plants will have relatively high levels of unionisation, both in response to monopsonistically-induced feelings of solidarity, and as a function of active union pressure to organise the area's leading employer. On the other hand, since the dominant plant has significant power in the LLM and can impose sanctions on both employees and unions seeking to organise, dominant plants may equally well reduce levels of unionisation.

To identify the impact of monopsony and help resolve the problem of indeterminancy questionnaire respondants were asked about the level of unionisation in their plant for each of the skill groups under consideration.(42) The results of the analysis are presented in Table 3.23 and appear to support the hypothesis that dominant plants have relatively high levels of union membership. For skilled male manuals the average level of unionisation in the dominant plant sample was 98%. The figure for other male manuals was 97% whilst for female manuals it was also relatively high at 87%.

Contrasting the level of unionisation in the dominant plant with the control group, and thereby in part controlling for potentially significant determinants of unionisation such as plant size, also to some extent supports the original hypothesis. However,

---

(42) Unfortunately, due to the sensitivity surrounding issues like union behaviour and industrial relations it was not felt possible to ask detailed questions on these topics. This constraint, therefore, effectively prohibits examining topics like the process of unionisation, management attitudes, and the number of unions in the plant.

this picture is only confirmed for the two male groups where in both cases levels of unionisation are significantly higher in the dominant plant sample at a 90% confidence level.(43) For female manuals there is no significant difference beween the two samples. Without further information it is difficult to establish why the pattern should differ between males and females although the higher turnover (see Section 3.6) of female manuals in the dominant plant sample may frustrate their efforts to unionise.(44) (45)

TABLE 3.23 THE EXTENT OF UNIONISATION

	Extent of Unionisation		
	Skilled* Male Manuals	Other* Male Manuals	Female Manuals
Average percentage union membership in dominant plants	98	97	87
Average percentage union membership in control group	94	91	89
Average union membership in dominant plants excluding coal and steel plants	94	96	83

Note: (i) * denotes difference significant at the 90% confidence level

(43) An important statistical point worth noting here is that marginal differences in unionisation at the top end of the scale may in fact relfect fairly significant differences in the pressure to unionise. That is, there is no reason to assume that the relationship between pressure to unionise and unionisation levels is linear. It is more likely that, ultimately, progressive increases in the pressure to unionise meets diminishing returns in terms of the level of unionisation.

(44) As Table 7 in Appendix 17 shows there is also a difference between high dominance and low dominance sub-groups and the extent of unionisation. For all skill groups unionisation tends to be higher in the high dominance groups supporting the original hypothesis. However, these differences are only significant in the case of skilled male manuals.

(45) Note that the level of unionisation for females in both the dominant plant and the control group samples is unusually high.

One possible explanation of the higher levels of unionisation in the dominant plant male groups may be the prevalence of nationalised industries in the sample. In particular, this refers to the responses from the mining and steel plants which tend to bias the industrial composition of the dominant plant sample. To test this hypothesis unionisation estimates were recomputed for both samples exluding the coal and steel industry replies. The results are shown in Table 3.24 and indicate that whilst the same pattern prevails the differences between the two groups are reduced and are no longer statistically significant at an acceptable confidence interval. However, whether this reflects the absence of the coal and steel plants or is a result of the reduced sample size it is difficult to tell.

TABLE 3.24 UNIONISATION LEVELS IN NON COAL AND STEEL PLANTS

	Extent of Unionisation		
	Skilled Male Manuals	Other Male Manuals	Female Manuals
Average percentage Union Membership in Dominant Plants	98	96	84
Average Percentage Union Membership in Control Groups	94	91	89

To summarise the results presented in this section, most of the available evidence seems to be consistent with the suggestion that monopsonistic pressures have a positive impact on levels of unionisation, although the effect is restricted to male workers. As far as it is possible to tell this result does not reflect compositional differences between the dominant plant and the control group samples.

TABLE 3.25 QUIT AND TURNOVER RATES IN THE DOMINANT PLANT AND CONTROL GROUP SAMPLES

	Dominant Plants			Control Group		
	Skilled Male Manuals	Other Male Manuals	Female Manuals	Skilled Male Manuals	Other Male Manuals	Female Manuals
Turnover Rate	8.1	13.5	15.4	9.2	15.0	14.9
Quit Rate	5.3	7.6	11.2	6.9	9.5	10.6

TABLE 3.26 QUIT RATES AND TURNOVER IN THE DOMINANT PLANT SAMPLE DISTINGUISHING BETWEEN NATIONALISED AND OTHER INDUSTRIES

QUIT RATES	Non-Nationalised Industries	Nationalised Industries
Total manual quit rate**	6.8	11.0
Quit rate skilled male manuals	4.8	7.3
Quit rate other male manuals*	6.6	11.0
Quit rate female manuals	9.4	18.2
Total manual turnover rate*	11.4	16.1
Turnover rate skilled male manuals	7.6	10.5
Turnover rate other male manuals	12.5	17.6
Turnover rate female manuals*	13.0	24.7

Note (i) ** indicates significance at the 95% confidence level
(ii) * indicates significance at the 90% confidence level

TABLE 3.27 NON COAL AND STEEL DOMINANT PLANT AND CONTROL GROUP QUIT RATE AND TURNOVER FIGURES

	Skilled Male Manuals*	Other Male Manuals*	Female Manuals	Skilled Male Manuals*	Other Male Manuals*	Female Manuals
Turnover Rate	7.6	12.5	13.0	9.2	15.0	14.9
Quit Rate	4.8	6.6	9.4	6.9	9.5	10.6

Note (i) * indicates differences significant at the 90% confidence level

7. The Relationship Between Monopsony and Quits

Theoretical considerations suggest that monopsony will reduce the number of alternative job opportunities within the LIM, and consequently reduces the propensity of workers to leave their current employment. The higher level of training associated with plant dominance may also reduce the quit rate.(46)

The evidence on the quit rate hypothesis gathered from the questionnaire data is presented in Table 3.25. Unfortunately the results are generally inconclusive and tend to show that although quit figures (and indeed turnover figures also) are generally lower in the dominant plant sample the differences are not statistically significant.(47) (48) This probably reflects both the limited size of the sample and the large standard deviations associated with the average rates in each skill group. To overcome this problem, and therefore determine more precisely the impact of monopsony on quits, would require a significant amount of additional research well beyond the scope of this study.

Another possible reason why quit rate and turnover differences between the dominant plant and control group samples are not significant may be because there is a bias towards steel and coal

---

(46) Lower quit rates in monopsonistic markets is indirectly suggested by MacKay et al (1971, p171-172). The argument is that "the nature of the labour market, and in particular its size compactness and the availability of alternative employers may affect wastage rates. (In smaller LIMs) the employee has a wide choice of alternatives only if he is prepared to move house, whereas (in larger LIMs) most employees can choose from a greater variety of jobs and alternative employers simply by varying their travel-to-work journeys".

(47) The results also apply to the total quit rates calculated for the dominant plant and control group sample as Table 8 in Appendix 17 shows.

(48) T-tests were also run to establish whether quits were lower in the high-dominance sub-groups. The results showed that whilst quits were marginally lower in the high dominance group the differences in all cases were statistically insignificant.

returns in the dominant plant sample. As Table 3.26 shows quits and turnover rates are generally higher in these nationalised industries, and indeed the differences are often statistically significant even although sample sizes are small and standard deviations high. Therefore, reworking the dominant plant and control group statistics leaving out the coal and steel plants should provide a more accurate and meaningful measure of the apparent impact of monopsony on the dominant plant sample. The results of this exercise are shown in Table 3.27. In this case the figures, not surprisingly, show a wider gap between dominant plant and control group quit rates, and in the case of skilled male manuals and other male manuals the differences are significant at the 90% confidence level. As a result it appears that there are limited statistical grounds to support the hypothesis that monopsony effectively reduces the level of quits in dominant plants.(49)

8. SUMMARY AND CONCLUSIONS

This chapter set out to show that dominant plant personnel policy would be influenced by the monopsonistic or quasi-monopsonistic conditions prevailing in these LLMs. The analysis covered all the major features associated with personnel policy and the results were based on questionnaires sent to the previously identified dominant plants and a carefully selected control group. Where possible the study results were supplemented by previously completed research.

The first hypothesis tested was that dominant plants tend to offer a level of wages below that prevailing in otherwise similar plants operating in competitive LLMs. In general this hypothesis was supported both by quantitative and qualitative evidence although

---

(49) Of course the results presented in this section are subject to the usual qualification that it was impossible to introduce meaningful controls into the analysis and thereby increase the level of confidence in the reported conclusions.

problems with the data set casts some doubt on the true nature of the differences. The possible impact of monopsony on wages and earnings was also examined by comparing the determinants of wages in the two sample groups: generally, influences consistent with monopsony seemed to be more important to the dominant plant sample although the evidence on this was limited and restricted to union behaviour.

Monopsony theory also suggests that monopsonistic plants tend to suffer from labour shortages whilst at the same time offering an equilibrium market wage rate. The empirical evidence on this only partly supports this proposition in that whilst many dominant plants suffer from labour shortages, particularly for skilled workers, the position was worse in the control group sample. Nonetheless, looking in more detail at the causes of labour shortages it would appear that monopsonistic pressures are more important, although not significantly so, in the dominant plant sample. A number of possible explanations were also put forward why dominant plants do not appear to suffer disporportionately from labour shortages.These ranged from variations in the level of unemployment in the LLM to the dominant plant's ability to cope more readily with labour shortages through their recruitment policies and screening techniques. Unfortunately, without more detailed information on the nature and cause of labour shortages it is difficult to be more specific and specify precisely the role of monopsony in influencing a plant's labour supply.

Dominant plant recruitment also appears to be influenced by monopsonistic considerations, although this is only apparent in the secondary and less important hiring methods which tend to be used mainly when LLM conditions tighten. That is, under normal LLM conditions dominant plants in general tend to behave like other plants by relying primarily on relatively inexpensive and passive recruitment channels. It is only when the particular characteristics of the LLM become more important that management appear to respond by adopting specialist recruitment policies to overcome the particular problems associated with monopsonistically-induced supply inelasticities. This appears to be especially true for the high skilled groups where supply inelasticities are more prevalent.

Dominant plant training is another aspect of personnel policy theoretically subject to monopsonistic pressures due to the partial loss of distinction between general and specific training and the tendency towards low quit rates in this particular market structure. Without detailed data on training it is difficult to empirically test this proposition. Nonetheless, the available quantitative and qualitative information from the questionnaires seem to support the hypothesis that dominant plants train more, both in total and on a per capita basis, than an equivalent plant operating in a more competitive environment.

The structural characteristics associated with a dominated LLM also appear to influence the level of unionisation in dominant plants. The questionnaire evidence shows that levels of unionisation for males are significantly higher in the dominant plant sample and this is not explained by any obvious sampling biases. This result supports the original hypothesis that for a variety of reasons dominance will tend to increase pressures to unionise.

Finally, the relationship between monopsony and quits was examined and in this case the relatively general evidence on the relationship was inconclusive in that although quits were marginally lower in the dominant plant sample, and therefore the results seem to support the original hypothesis, the individual differences were statistically insignificant. In part this appears to reflect the concentration of high quit rate industries in the dominant plant sample. That is, when the bias is corrected the expected difference between the control group and dominant plant group becomes more pronounced supporting the original hypothesis.

In overall terms, and considering dominant plant personnel policy as an interrelated system rather than separate components, it does appear that monopsony has a widespread, if not profound, influence on dominant plant personnel policy. That is, it seems that monopsonistic influences in one area of dominant plant personnel policy do tend to influence other aspects of personnel policy. As a result of these influences, and although precise measurement is impossible, the total impact of monopsony on dominant plants appear to be significant. In other words overall behavioural characteristics are different from similar plants operating in a more competitive environment.

CHAPTER 4

A THEORETICAL MODEL OF INTRA-LLM DOMINANT PLANT BEHAVIOUR THE IMPACT OF PLANT SIZE ON PERSONNEL POLICY

1. INTRODUCTION

Earlier considerations (op cit Chapter 2, Section 2.6) suggest that the impact of dominance on plant personnel policy may not be fully reflected in the monopsonistic framework developed and tested in Chapter 2 and Chapter 3, since this model largely ignores the influence other firms in the local labour market may have on dominant plant behaviour. As a result, it is important to examine how the dominant plant relates to other establishments within the local labour market, and on this basis explore how these relationships condition and qualify the monopsonistic based predictions. That is, as dominant plants are not true monopsonists, it is only when interactions between these and other plants in the area are fully taken into account that it is then possible to establish the overall impact of dominance on plant personnel policy.(1)

As this chapter explains the labour market behaviour of dominant plants tends to differ radically from other plants operating within the same local labour market. The most important differentiating feature of dominant plant intra-local labour market behaviour is the large absolute size of these establishments relative to other plants within the area. The impact of the size effect on dominant plant personnel policy is important since within the plant it conditions levels of job satisfaction and attitudes to work, industrial relations and work-place cohesion, and hence the fundamental aspects

---

(1) Recognising the importance of other plants in the area may help explain why, for certain aspects of personnel policy, monopsony is perhaps less in evidence than theoretical considerations would suggest.

of the economics of plant manpower and personnel policy management (for a brief summary of the theory and evidence see the review article by George et al, 1977.) (2)

Recognising the impact of size on dominant plant behaviour complicates the process of modifying the monopsony based interpretation of dominant plant behaviour. No longer is it simply a matter of acknowledging that there are other plants in the local labour market, and that these behave and interact in a broadly similar fashion to condition the impact of monopsony on the dominant plant. Instead the radical differences in personnel policy between the dominant plant and other establishments in the local labour market have to be incorporated into a highly specific model of intra-firm local labour market behaviour. This then forms the framework for determining the interrelationships between establishments in the area, and as a consequence should identify the need to qualify the original monopsony model and the findings of the related empirical work.

Although the rationale for developing an intra-LLM model of dominant plant behaviour has, up until now, been couched exclusively in terms of seeking to refine the predictions of the monopsony model the analysis is also important for other reasons. One major consideration is that examining the intra-local labour market behaviour of dominant plants deals with the particular case of how a quasi-monopsonistic plant relates to the other establishments in the area. This differentiates the research both from earlier contributions on the size effect and earlier investigations into local labour market behaviour since previous studies do not consider in any depth the plant size distribution within the LLM and its related implications. Consequently, and no matter which way the problem has been approached in the past, previous models and research have been couched in a wider framework which has been too

---

(2) Size may be measured using different indices, such as employment, capital or output. This research focuses exclusively on employment, but since all measures tend to be closely correlated this makes little practical difference. For example, see George et al (1977).

general to capture and identify the specific effects associated with plant dominance. As a result the approach adopted in this study should complement and add significantly to the understanding of the total impact of dominance on plant and local labour market behaviour.

Another reason why intra-LLM analysis is an important contribution to the analysis of dominance is that it lays the foundation for the investigation into how dominant plants influence the underlying efficiency of the local labour market. This aspect of LLM behaviour is considered in Chapter 5 and Chapter 6 and is based on the analysis of local labour market UV ratios. Nonetheless, underlying this analysis is a model of how the dominant plant relates to other plants within the local labour market and influences information flows in the area. Consequently, it is of fundamental importance to develop and test a model of intra-local labour market behaviour associated with plant dominance which can then be further extended into the analysis of LLM efficiency.

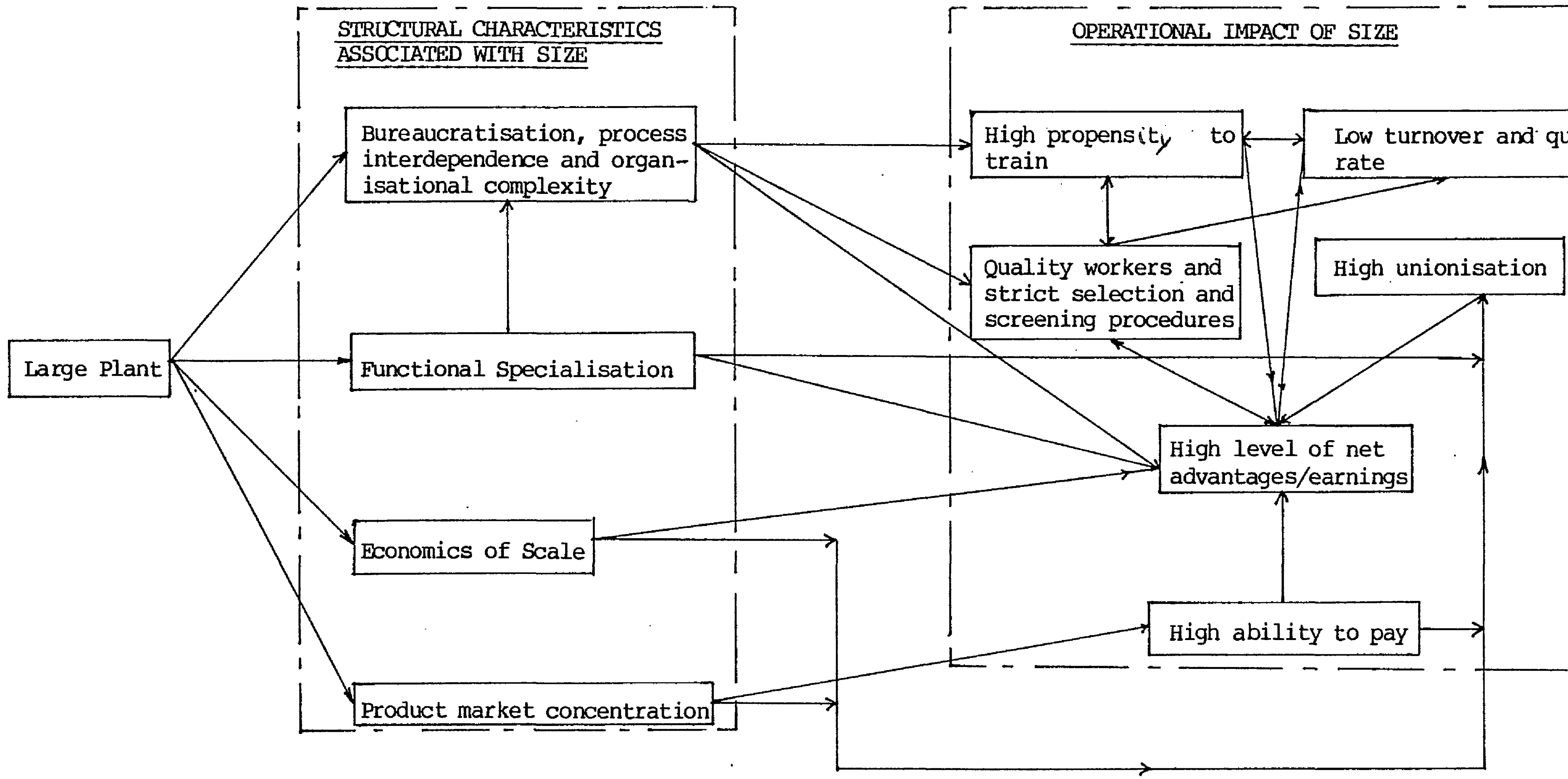
For practical purposes the most appropriate way to incorporate all aspects of the intra-local labour market analysis into the investigation of plant dominance is to examine the theory and evidence behind the size effect and develop their related operational predictions. These should be set out whilst continually bearing in mind the possible interrelationships between the dominant plant and other establishments in the area. Subsequently, the principal and most relevant conclusions emerging from the model should be tested using the questionnaire returns and any other relevant control data. Having examined how the dominant plant relates to the remainder of the local labour market, the principal results should, where necessary, be used to qualify the original conclusions based on the monopsonistic model and the related inter-local labour market empirical analysis.

Although the approach to the problem is perhaps self-evident it should be recognised that both the size effect and local labour market analysis are both complicated aspects of labour market behaviour incorporating a number of analytical and empirical problems which have not, as yet, been fully resolved in the literature. Therefore, it should be stressed that under these circumstances it is not intended to develop a detailed and comprehensive model of dominant plant intra-local labour market behaviour. Instead, the key features of both the size effect and intra-local labour market behaviour, as identified by previous research, form the basis of the investigation.[3]

---

(3) In particular, in several cases it became evident that although a labour market variable may have been affected by plant size it would be difficult to isolate the impact with any degree of precision given that the project was restricted to questionnaire analysis. Under these circumstances those aspects of personnel policy are not considered in depth in the theoretical analysis. This problem relates mostly to industrial relations behaviour and particularly strike-proneness which previous research suggests is strongly influenced by plant size. For detailed evidence see Eisele (1973-74) P.561 onwards; Prais (1978) PP.388-394; and Shorey (1976).

DIAGRAM 4.1 THE DETERMINANTS OF LARGE PLANT PERSONNEL POLICY



2. THE STRUCTURAL CHARACTERISTICS ASSOCIATED WITH SIZE

As Diagram 4.1 indicates, there are essentially four structural characteristics associated with plant size and these are bureaucratisation and organisational complexity; functional specialisation; product market concentration; and economies of scale. Bearing this in mind this section briefly discusses the way in which large plant size induces these particular characteristics so that in the following sections it is then possible to demonstrate how these factors, operating either jointly or in isolation, ultimately influence the operational characteristics of large plants as manifested in their distinctive attitude towards key aspects of personnel policy. Conveniently the principal structural characteristics associated with plant size have been relatively well researched and it is only necessary to present a brief summary of the main results and conclusions.(4)

Size, Bureaucratisation and Organisational Complexity. Industrial relations theory and supporting empirical evidence (George et al 1977, Brown and Schoenker, 1971; Hall et al, 1967; Indik, 1963; Tallacci, 1960; Blauner, 1964; and Shorey, 1976) suggests that there is a direct link between plant size and bureaucratisation. The larger the plant then the more complex the organisation becomes and the more difficult it is to exercise authority through informal channels, direct management surveillance and contact with the workforce. That is, as plant size increases and the resultant hierarchical decision chain expands, the greater the likelihood of distorted and inadequate information being passed to the workforce. This, in turn, leads to a substitution of informal authority relationships by formal rules and bureaucratic procedures, these being the only feasible means whereby management may maintain adequate control over communication, discipline and output. However, and in terms of the workers' psychic income, increased

---

(4) The correlation between size and product market concentration shown in Diagram 4.1 is not discussed in this section since it appears to reflect a statistical correlation rather than a causal influence. The effect of product market concentration on large plant labour market behaviour is, however, introduced in Section 3.

bureaucratisation will tend to reduce job satisfaction by restricting the workers' freedom and identification with plant and management objectives (see Shorey, 1976; Williamson, 1967; and Beer, 1964).[5]

Bureaucratisation, besides influencing organisational procedures, may also have an effect on worker satisfaction by limiting the extent of shop floor interaction (see Ingham 1970, P.38). As a result of any such separation, problems of status and differentials may develop between different work groups (see Shorey, 1976, P.177).[6] Related to this a further potential problem associated with the separation of work groups is that it may serve to reinforce the feeling that an individual's contribution within such a large organisation is apparently insignificant, with the net result that worker alienation will be further increased (see Shorey, 1976, P.12; Indik 1963; and Revans, 1956).[7]

In sum, existing evidence suggests that bureaucratisation and organisational complexity increases formalisation, reduces worker and management flexibility, and inhibits meaningful interaction between peer and authority groups. Consequently feelings of isolation and dissatisfaction will develop amongst large plant employees, with the result that the net effect of bureaucratisation on a large plant workforce will be negative.

---

(5) It has also been suggested that large plants do not suffer from these problems because they devote a disproportionately high amount of resources to the personnel function. For example, see George et al (1977, P.267).

(6) These features of worker behaviour are also in part associated with technology which may not be related to plant size (see below).

(7) This trend may also be reinforced by bureaucratic limits imposed upon worker interaction with authority groups. See Ingham (1970, PP 38-39).

Size, Technology and Functional Specialisation. Much of the evidence in the literature (George et al, 1977; Shorey, 1976; Masters, 1969; and Sawyer, 1973) also suggests that there is a relationship between plant size and job content since as plant size increases employers are able to practice extensive division of labour and increase worker specialisation. As a result, in large plants more jobs become standardised and routine thereby reducing the level of job satisfaction in large plants by depriving workers of non-material rewards such as pride in workmanship and recognition of achievement.(8) Accordingly, other things remaining equal, there will be a further disutility associated with working in a large plant. Despite this conclusion it should be recognised that other research (Woodward, 1970; Blauner, 1964; Ingham, 1970; and Sayles, 1970) does not fully support this conclusion. Indeed there appears to be considerable evidence to suggest that job content is primarily determined by technology rather than size, and technology is not clearly related to size.(9) If this is the case then the suggested inverse relationship between job satisfaction and plant size may be less significant.

Some of the confusion on the relationship between size, technology and the division of labour may be resolved by considering the relationship between plant size and capital intensity. Several

---

(8) The high levels of bureaucratisation associated with large plants will also, to a limited extent, influence job content (Ingham: 1970, P.37). That is, since informal procedures are no longer a practical method of controlling production they will tend to be replaced by strict rules governing job content and working practices. As a result, management will be forced into adopting a more formal and standardised approach towards job definition.

(9) Woodward (1971), in particular, contends that unit and batch technologies retain a wide variety of job content whereas in more mass production industries work tasks are normally heavily sub-divided. Woodward (1971) also attempts to show that there is no relationship between size and technology.

researchers (Pryor, 1972; Bolton, 1971; Hood and Rees, 1974; George et al., 1977; and Haworth and Rasmussen, 1971) have suggested that there is a strong positive correlation between establishment size and capital intensity which is different but obviously related to the suggestion that there is a relationship between plant size, technology and hence job content. The correlation between size and capital intensity also has more direct implications for the characteristics associated with size in that there appear to be two relatively well established and important results associated with the relationship:

(i) the high capital intensity associated with large plants suggests that these employers will recruit a particular type of worker in order to minimise expensive plant downtime and damage to machinery.

(ii) the high capital intensity associated with size increases workers bargaining power in that a small proportion of the plant's total cost function controls the unit's output and productivity. In terms of the workforce it is therefore important to be unimportant (see Ulman, 1971).

The operational implications of both these conclusions are examined in detail in the following section alongside any separate effect size may have on job content.

Economics of Scale in the Personnel Function. Large plants will generally be in a position to take advantage of economies of scale in many aspects of personnel policy behaviour. The impact of economies of scale on plant labour market behaviour will vary depending on the nature of the plant and the aspect of personnel policy under consideration. Nevertheless, these effects are probably both sufficiently important and wide ranging to significantly influence management's overall attitude towards personnel policy. For example, size and its associated economies of scale will allow management to operate a sophisticated personnel department staffed with experienced specialists responsible for particular aspects of plant personnel policy and labour market behaviour. Such specialisation will allow large employers to adopt a more efficient and objective approach to manpower management. As a result this will enable large plants to plan personnel policies in the light of both perceived internal requirements and in relation to external local labour market conditions. In view of their more limited resources this option is not open to smaller plants and so their attitude towards a similar LLM environment may differ.

In more economic terms large plant size and the resultant scale economies will also influence the unit costs associated with many aspects of personnel policy in that such plant will be able to spread their overheads over a larger workforce. As a result, large plants will in many respects benefit from significant financial advantages in the provision of personnel functions, and this will once again result in differences in labour market behaviour between large and small units.

3. THE OPERATIONAL EFFECTS OF SIZE

The structural characteristics associated with plant size, operating either in isolation or together, have widespread implications for both worker and management attitudes towards personnel policy. That is, the combination of the separate components of the size effect suggests that large plants will have a distinctive approach to personnel policy and their relationship with the local labour market. However, in empirical terms, predicting the precise nature of the impact of size on a specific labour market variable is difficult since so many influences may condition any single aspect of personnel policy.

To try and overcome this problem the approach adopted in this research is to review the principal determinants operating on each variable, and by reference to previous theoretical and empirical evidence suggest how these will ultimately influence large plant personnel policies. No serious attempt is made to develop or reappraise previous research and therefore the model under test is for the most part a hybrid version of existing contributions on the subject. In addition, no attempt is made to accurately determine the lines of causation between the interrelated variables beyond the relationships suggested in the existing literature.

3.1 The Relationship between Plant Size and Earnings

As previous writers have pointed out (Masters, 1969; Sawyer, 1973; Hood and Rees, 1975; George et al, 1977; Haworth and Rasmussen, 1971; Lester, 1967; Mayhew, 1976, and Rees and Shultz, 1970) the structural characteristics associated with large plant size have important implications for the level of earnings in the establishment. In particular, since the high level of bureaucratisation and functional specialisation inhibits worker satisfaction in the plant this may force the employer to offer high earnings thereby helping to equate the level of pecuniary and non-pecuniary benefits between plants competing for labour.

Large employers not adopting this strategy would be faced with high turnover, high absenteeism and the threat of more direct forms of industrial action (see Ingham, 1970; Shorey, 1976, and Eisele 1973-74, for further details).

The tendency for large plants to offer high wages to compensate for the disadvantageous working conditions will be reinforced by the high capital intensity characterising such establishments. Workers in large plants will often constitute a relatively low proportion of an employer's total costs. Therefore the cost to management of accepting a worker's wage claim will usually be less than the costs associated with industrial action (see Hood and Rees, 1974, P.174; and George et al, 1977, P.267).(10) Similarly, it has been suggested (Haworth and Rasmussen, 1971, P.376) that under certain circumstances a worker's marginal productivity, and therefore his wage, will be determined by the capital to labour ratio prevalent in the plant. If this argument can be sustained then the higher the capital intensity the higher the wage.

Higher wages in larger plants may also reflect the correlation between plant size and product market concentration. It has been suggested (Masters, 1969, PP.341-342; Hood and Rees, 1975, P.172; and Weiss, 1966) that plants operating in highly concentrated industries pay higher wages since generally speaking they earn higher levels of profits and consequently have a high ability to pay. Accordingly, although there is no apparent causal relationship between product market concentration, plant size and wages there will be a statistical relationship.(11)

The ability of the workforce to bargain for the high wages suggested by the fundamental structural characteristics associated with size will also be helped by the higher levels of unionisation

---

(10) Ulman (1971) points out that it is only "important to be unimportant" under certain conditions, and if these are not fulfilled then wages will not necessarily be pushed upwards.

(11) For some conflicting views on this hypothesis see Levinson, (1967, P.204); and Masters, (1969, P.341).

prevalent in large establishments (see Section 3.3; and Bain and Elsheikh, 1980). More specifically it has been suggested (see Hood and Rees, 1975, P.173; Shister, 1953; Berhowitz, 1954; Hawworth and Rasmussen, 1971, P.378; and Sawyer, 1973, P.147) that since a large plant environment is generally conducive to the growth of strong well-organised unions this will help translate worker wage demands into earnings above the rate prevailing in otherwise similar but smaller plants.(12)

In conclusion, the combined effect, both direct and indirect, of the structural characteristics associated with size appear to have a positive effect on wages and earnings.(13) Accordingly, and within the context of the local labour market, the dominant plant because of its size, will offer higher earnings than otherwise similar smaller units.(14) (15)

If a high intra-Local Labour Market wage effect is identified in the dominant plant group then this will also have implications for

---

(12) Again some authors (for example, Masters, 1969, P.343) have suggested that the opposite effect may prevail in that since large plants are also characterised by strong management this may act as an effective countervailing power to any union or worker pressure.

(13) The method of wage payment and the quality of work demanded by large employers will also have a positive influence on wages. These effects are discussed in Section 3.2.

(14) Empirical evidence also suggests that large plants will tend to provide an above-average level of fringe benefits thereby supplementing earnings and the overall compensation package (see Lester, 1967). Providing high levels of fringe rewards is a particularly attractive way of boosting the benefit package in large units since it is one effective method of reducing worker alienation and the associated non-pecuniary disadvantages associated with working in the plant. In addition large plants will also favour providing fringe benefits since many aspects of such efforts are subject to significant economies of scale.

(15) There is some evidence to suggest that wages are to some extent influenced by local labour market size (Rees and Shultz, 1970; Fuchs, 1967). Consequently since large plants are generally associated with larger local labour markets large plants will tend to have higher wages. However, as this research concentrates on intra-local labour market comparisons the problem of controlling for this influence does not arise.

the monopsony model. Most importantly a dominant plant paying relatively high wages in the local labour market will tend not to be faced with an inelastic labour supply curve, which means that the marginal costs of labour will not lie above the supply price. Therefore, the key element in depressing wages in these plants is absent. Consequently, the size effect, when related to the presence of other establishments in the area, may serve to offset the impact of monopsonistic wage pricing on the dominant plant. However, the process will tend to be more complex than this in that the labour supply inelasticities will not be completely removed from the local labour market but may, somewhat paradoxically, be transmitted to the smaller plants in the area. In other words, monopsonistic influences will filter down the labour market plant size hierarchy and ultimately the smallest plants in the local labour market will be more inclined to experience monopsonistic influences. Moreover, as long as the effect of monopsony is experienced by some plants in the area then it is likely to depress wages throughout the area. With respect to the dominant plant this means that their wages only have to exceed the levels set by the monopsonistically affected smaller plants in order to become the area's leading wage payer. As a result, it should be possible to continue to observe the impact of monopsonistic pressures on wages although this may be less important than the original monopsony model suggested.

3.2 Plant Size, Worker Quality, Recruitment Methods and Labour Shortages

Plant size also affects an employer's worker quality requirements, recruitment methods, and selection procedures. All these factors, in turn, have implications for the possible impact of labour shortages on large plants. Since all these facets of labour market behaviour seem to be closely related they are dealt with together in this section. As with earnings this section will also show that, once the impact of plant size is taken into account, this will influence the results and conclusions drawn by the monopsony based model.

In terms of labour quality the structural characteristics associated with large plant size tend to increase the level of performance demanded by these establishments from their workforce, and as a result management will actively seek to recruit only relatively high quality workers. (See George _et al_ 1977, P.206; Masters, 1969, P.342; Haworth and Rasmussen, 1971, P.378; Sawyer, 1973 PP.148-149; Salt, 1967; and Prais, 1978, PP.368-384.) As highlighted previously one major reason for this preference is that large plants are characterised by organisational complexity which is reflected in a high degree of process and employee inter-dependence. This implies that output will be at least partly determined by the least efficient workers on the production line. As a direct consequence, and remembering that many large plants are relatively capital intensive, it is important to have a strategy that will help minimise relatively expensive downtime and production stoppages by reducing the probability of erratic employee performance and error. One of the simplest methods of ensuring this is by recruiting and retaining high quality workers. Large plants may also prefer to employ quality workers to avoid the need for close supervision which would otherwise be necessary in such a complex and highly interdependent organisation (see Lester, 1967; and Pencavel, 1977). That is, foremen and managers in large units will be less able to provide close supervision of their front line workers and as a result will be inclined to recruit higher quality workers who can perform without their constant attention.(16)

Accepting that in large plants management need to employ high quality workers implies that such establishments will have to

---

(16) Concerning the need for intensive monitoring in large plants such employers have an alternative course of action available to overcome the problems of supervision and efficient production management. Rather than recruiting high quality and therefore expensive workers, management may prefer to introduce a method of wage payment which will fulfill the supervisory function. The most appropriate method for such a role is some form of payment by results (PBR) system whereby employees have an incentive to work without direct or close supervision. Empirical evidence (George _et al_, 1977, P.266; Sawyer, 1953, P.145; McCormick, 1977; and Metcalf, 1976) confirms that large plants adopt PBR methods more frequently than smaller plants. Moreover, in many cases the prime reason put forward for using PBR is that the bureaucratic nature of the large plant inhibits effective control of the workforce and therefore output. The positive correlation between the size of the plant and the use of PBR also has implications for earnings since whatever the advantages of PBR methods for the employer, it is not a payment method favoured by the workforce. In particular, case

develop an appropriate policy to recruit and retain this category of worker. Perhaps the only important and distinctive approach that management can offer to achieve this objective is to offer a high level of earnings relative to the remainder of the local labour market. If the predictions of competitive theory are fulfilled this will result in a surplus of prospective recruits being attracted to the large plant, from which the employer may then select only the most promising applicants. Restricting recruitment in this way will prevent the wages in the large plant being bid down with the resultant loss in their power to attract a surplus of workers. That is, the only recruitment policy which will meet the large plant requirements in the long-run will be to offer a benefit package superior to that offered by competitors in the local labour market (see Bronfenbrenner (1956) for a detailed exposition of this model, and Rees and Shultz (1971) for supportive evidence).

The selection methods associated with such a high wage recruitment policy will also be distinctive. It is likely that in response to the relatively high level of earnings in the large plant new job applicants will form a nominal queue from which management may select on a discretionary basis wherever necessary. To aid the process of attracting and subsequently selecting the best workers, and at the same time instituting an organised queuing system, large plant management may also tend to adopt a characteristic attitude towards hiring procedures by maintaining a comprehensive list of on-spec applicants attracted by the offer of high wages. In so doing management may select appropriate applicants as requirements dictate. Smaller firms need not maintain such a formalised system as their labour needs in terms of both quantity and quality would not justify the administrative costs associated with such a system (see Doeringer and Piore, 1971).

---

(16) (contd). studies have shown that the advantages associated with PBR are widely offset by a sense of insecurity among workers which arises in the fluctuations in earnings commonly associated with such systems. Therefore to overcome these non-pecuniary disadvantages employers adopting PBR systems will also tend to offer a relatively high level of earnings (see Sawyer, 1973, P.145; and Metcalf, 1976). Note, however, that more recent evidence suggests that PBR methods are becoming less popular and this implies that, on balance, large plants will probably favour recruiting high quality workers.

Allied to the notion of hiring quality workers and maintaining a comprehensive list of on-spec applicants, large plants should also favour distinctive screening procedures. In particular, the quality constraints imposed by the structural chracteristics associated with size will dictate that selection criteria will be relatively strict and rigourously imposed. In operational terms this suggests that job applicants in large plants will be subjected to a number of technical and personal interviews. By contrast smaller establishments operating with less sophisticated personnel departments will recruit on a more informal basis, particularly given that the need for quality is not of such paramount importance.(17)

The larger plants' overall attitude towards labour quality, recruitment and screening, plus their tendency to offer above average earnings will have a direct bearing on the impact of labour shortages on the plant. It follows that if the plant is offering relatively high wages then a surplus of workers will be automatically attracted towards the plant, and this will be manifested in a waiting list for future vacancies. The only problem with the labour supply situation may be if the relatively high wage does not produce workers of sufficient quality or of the correct skill mix. Under these circumstances such a mismatch may still lead to the joint presence of high earnings, shortages and a waiting list.

To summarise this section in relation to the analysis of dominant plant behaviour, the existing evidence suggests that in relation to their local labour market competitors dominant plants, because they are large, will seek to recruit high quality workers. Furthermore, it will be possible to meet this objective since dominant plants tend to pay relatively high wages in relation to other local labour market employers. The need to select appropriate workers from the resultant over-supply of workers means that dominant plants will tend to develop specialised recruitment and screening methods. Recognising these aspects of dominant plant

---

(17) For example, Mackay et al (1971) state that: "where large wage differentials are found they are accompanied by the application of stricter hiring standards in the high wage units".

behaviour and the associated inter-relationship with other plants in the area may have fundamental implications for the inter-local labour market monopsony based model of dominant plant behaviour. In particular, the dominant plant's ability, via the impact of size on earnings, to attract labour from within the local labour market may reduce the need for dominant plants to implement monopsonistically induced recruitment methods. Similarly, if dominant plants are faced with an over supply of recruits as a result of their high wage policy then it is less likely that dominant plants will be characterised by shortages, an important feature of the monopsony model.

3.3 Plant Size and Unionisation

From an organisational viewpoint the high level of bureaucratisation and the consequent separation of management from the workforce (and to some extent workers from each other) which characterises large plant behaviour has important implications for the level of unionisation in such establishments. More specifically it has been suggested (Hood and Rees, 1975; Shister, 1953; Berhowitz, 1954; Haworth and Rasmussen, 1971; and Sawyer, 1973) that these features, coupled with a high degree of intra-work group horizontal communication, will serve to divide worker and management interests and increase suspicion and mistrust about their respective motives and actions. Under these circumstances employees in large units will be more inclined to join a union in an effort to act against the adverse social environment and working conditions in the plant. From a bargaining point of view within a large plant, the act of joining a union will also help consolidate the workers' negotiating position, and develop an effective countervailing power against a relatively powerful employer. Ultimately, therefore, these economic characteristics will also lead to high levels of unionisation in large plants.

Supporting these points there is also an argument that suggests that rather than relying solely on employee initiated efforts to unionise, large plants will probably find themselves selected as prime targets for union activity since many large units will be easy to organise and at the same time particularly vulnerable to outside pressure given the 18% separation of management and the workforce. This process will be particularly evident in areas where unions consider that in organising large plants in the local labour market other establishments in the area or industry will follow.[18]

Empirical evidence for the view that unions are better represented and organised in large plants comes from Price and Bain (1976, P.348); "the available evidence suggests that establishment size is a critical determinant of unionisation".[19] In direct support of this conclusion Bolton (1971) found that only 8% of small firms were completely unionised, and in each industry these tended to be the larger of the smaller firms. Moreover, almost two-thirds of smaller firms had no trade union members on their payroll.[20]

In operational terms the principal effect of unionisation will be to increase wages and improve working conditions within the plant. This outcome reflects union bargaining experience and their ability to marshall the workforce effectively as a single unit. The empirical isolation of the impact of unions on wages is an extremely complicated exercise since many other factors have to be controlled for in any such investigation. Nevertheless, recent estimates of the union/non-union differential seems to support the argument that, <u>ceteris paribus</u>, unionisation biases wages upwards. For example see the relatively recent work by Mulvey (1978) or Metcalf (1977).

In terms of dominant plant behaviour, and drawing together the conclusions set out above, the questionnaire analysis presented in the following chapter should show that because of their size, union

---

(18) Unions may also be more prevalent in large plants indirectly through their association with highly concentrated industries where profits and therefore ability to pay tend to be above average.

(19) See also Bain and Elsheikh (1980) for further supportive evidence.

(20) On a different but related point, Boraston, <u>et al</u> (1975) also found that even if small plants are unionised they tend to be less well organised within the plant when compared to larger establishments.

levels in dominant plants are high relative to other plants in the area. Moreover, this union activity should effectively support and add substance to the previously highlighted propensity for these plants to offer relatively high earnings. It may also be possible to identify union negotiated improvements in working conditions within dominant plants.

Although plant size influences unionisation it is not expected to materially alter the predictions of the monopsony model or the conclusions drawn on the basis of the empirical evidence presented in Chapter 3. This is largely because this aspect of the size effect will probably not have such direct implications for other plants in the areas, as was the case with earnings and as a consequence recruitment and shortages.

3.4 Plant Size and Industrial Training

Industrial training is normally considered as an effective and direct means of enhancing worker productivity. Moreover it has also been recognised (Proctor and Thornton, 1961) that training may also enhance worker performance more indirectly by helping improve intra-plant communication, bolstering morale and co-operation, lessening the burden of supervision, and reducing worker grievances. These effects are particularly relevant to large plants since their structural characteristics significantly restrict the non-pecuniary benefits associated with work. Accordingly, and to overcome the problems created by size, large plants would normally be expected to undertake a disproportionately high amount of training relative to otherwise similar smaller plants.

Another reason why large plants may train more than smaller establishments is that often they can take advantage of substantial economies of scale in their training activities. That is, many training programmes have relatively high fixed costs, in terms of both equipment and manpower, with the result that the more workers a plant trains the lower the per-capita cost. Consequently, large plants will have major cost advantages over small units. Reinforcing this are the benefits large plants enjoy in planning training programmes. In particular, a large plant with its more sophisticated personnel department will be able to accurately estimate its training needs on the basis of previous employee behaviour and labour wastage rates. This will allow the plant to significantly reduce the obstacles to rational and planned training programmes. Smaller firms, by contrast, tend to operate in a more uncertain environment where it is more difficult to estimate training needs. Consequently, smaller firms will tend to recruit experienced and previously trained workers.

There is a considerable amount of empirical evidence to support the theoretical arguments suggesting a positive relationship between plant size and training. At an aggregate level the published figures on the 1964 UK Labour Costs (see HMSO, 1964) show a strong correlation between plant size and the propensity to train.(21) A relationship between size and training has also been highlighted in several more disaggregated studies. For example, Giles' (1968) study of the initial impact of the 1964 Industrial Training Act shows that on a per-capita basis for every category of training covered the larger plants spent more than smaller firms. Similarly, Serbien (1961) in his survey of industrial training practices found that plant size was a crucial determinant of all aspects of training. Finally, Foltman (1964) in his work on US labour markets found that larger firms prefer to train, whereas smaller firms regard training as too expensive and prefer to recruit experienced personnel in the labour market.

The positive correlation between plant size and industrial training also has important repercussions for other aspects of plant personnel policy, and especially large plant attitudes towards wage determination (for example, see Pencavel, 1972). The nature of these wage effects will tend to differ depending on whether the training is plant specific or of a more general nature.

---

(21) The same pattern applies to the 1968 figures. For example, the data shows that for all manufacturing industry the largest size category when compared to the other groups spends 59% more per employee on training.

With respect to plant specific training, theory states that employers will finance the cost of industrial education and subsequently recoup the benefits by offering a wage below the workers augmented marginal product. However, and as Chapter 2 has already illustrated, in order to minimise the long-run difference between the wage rate and the augmented marginal product management will offer a wage premium to ensure that specifically trained workers remain with the plant. Applying this model to large plant training policies implies that such plants should offer a relatively high wage premium, since by investing highly in specific training they have the most to lose if a worker quits.(22) In the case of a dominated local labour market, however, the size of the wage differential between large and small plants will tend to be minimised because the potential for mobility is restricted by the structure of the market.

Variations in the propensity to provide general training will not necessarily result in wage differentials between large and small plants. As Chapter 2 demonstrated a generally trained worker finances his own industrial education since once trained he could leave his current occupation for an equally attractive job without the employer being able to successfully amortise his investment in human capital. To compensate the worker for financing his training the generally trained employee is rewarded with a higher post-training wage to reflect his increased productivity. The logic of this system suggests that even if large plants do "provide" more facilities for general training and are more efficient in running their training programmes this will affect the wage offered by other establishments within the local labour market. This is because the augmented productivity applies to all employers and will

---

(22) Within the context of the local labour market and inter-firm comparisons it may seem that this result has little meaning since, by definition, specific training only relates to a particular plant and hence any comparison cannot be strictly controlled. Nonetheless, in practical terms it is still important to recognise that differences in the extent of plant specific training will result in wage differentials between broadly similar groups.

be reflected in the wage offered by all plants in the local labour market.[23]

This simplistic division between large and small plant general training has to be modified in a dominated local labour market where the lack of mobility associated with the markets means that workers may not be prepared to bear the full burden of financing general training. Under these circumstances the employer will have to bear part of the cost of the quasi-specific training which in turn implies that a wage differential will emerge between establishments reflecting their size and propensity to train.

In sum, therefore, it appears that the size effect will influence dominant plant training practices in relation to the rest of the local labour market. In particular, it should be possible to show that dominant plants have a relatively high propensity to train. This will also influence the level of earnings offered by the dominant plant relative to other plants in the area, but the net effect of this is difficult to predict given the distinction between general and specific training, and the obvious limits to mobility associated with dominated local labour markets. In terms of the wider implication for the monopsony model, the variations in training behaviour are only relevant in that they serve to support higher earnings in the dominant plant relative to the rest of the local labour market and thereby may ultimately offset the problems related to recruitment and shortages.[24] [25]

---

(23) This reasoning suggests that large plant apprenticeship wages will be lower than those prevailing in small plants. However, if the large plants are sufficiently more efficient in their training programmes this need not be the case.

(24) In talking about the provision of training courses and formal schooling within the plant the model of training adopted in this section may be criticised for overlooking on-the-job training. This shortcoming may be important if on-the-job training is an important component of total plant training as suggested, for example, by Thurow, (1976; Chapter 4). It is also worth noting that due to its informal nature this type of training is maybe more important in smaller plants. Therefore, in terms of total training effort, differences in the extent of training between large and small plants may be lower than originally hypothesised.

4. CONCLUSIONS

The principal objective of this Chapter was to identify the most important determinants of large plant personnel policy and relate the results to the labour market strategies adopted by such plants. The way in which large plant personnel policies affect the establishment's relationship with the remainder of the local labour market was also considered. In adopting this approach it was then possible to suggest how dominant plants behave in relation to their local labour market environment since the only factor distinguishing them from other plants in the area is size. Moreover, once these intra-local labour market results are considered it is also possible to establish how these predictions affect the monopsony model developed and tested in Chapter 2 and Chapter 3.

The results of the investigation into the determinants of plant personnel policy shows that dominant establishments, because of their size, are characterised by bureaucratisation, organisational complexity, functional specialisation and economies of scale. Within the local labour market dominant plants will react to both the dangers and opportunities associated with these features with the result that their personnel policy will differ significantly from the approach adopted by smaller establishments operating within the same local labour market.

Perhaps the most important response of dominant plants to the structural characteristics associated with size will be to offer a wage above the local labour market equivalent in order to overcome the disadvantages associated with a large plant environment. At the same time this wage premium will have to be sufficiently high to attract and retain the high quality workers required by large plants to ensure optimal efficiency. Pressure to pay above average earnings may also result from the high levels of unionisation and training often associated with plant size. Finally, as a result of paying above average wages relative to the rest of the local labour market dominant plants will also be characterised by highly selective recruitment and selection procedures.

---

(25) (cont.) Various authors (George et al, 1977, P.269; Sawyer, 1973, P.148; and Stoikov and Raimon, 1968) have also suggested that there is a relationship between plant size and quits. However, both theory and empirical work make it very difficult to develop any clear propositions which can be tested in the research. This problem is exacerbated by the problems associated with gathering accurate data on quits at a plant level. As a result of these observations it was decided not to consider the impact of plant size on quits in the research.

As Diagram 4.1 shows the operational effects of size are interrelated and to a large extent self reinforcing. For example, in addition to worker quality requirements being influenced by bureaucratisation and related structural considerations, it will also be influenced by the plant's prevailing wage rate and management's propensity to train. As a result of these often complex interrelationships between variables it is extremely difficult to determine the principal causal factors influencing and characterising dominant plant personnel policy relative to the rest of the local labour market. Nonetheless the overall end result is predictable.

The model of large plant behaviour may also be used to develop hypotheses relating dominant plant behaviour to the rest of the LLM since within the context of the local labour market the term "dominant" may effectively be substituted for large. In broad terms this analytical framework is consistent with the predictions of the competitive model, whilst at the same time recognising that significant earnings differentials between plants may prevail over time. Such a model relies heavily on illustrating that the labour quality requirements of large and small plants differ markedly and this provides a sufficient economic justification for large plants to offer a relatively high level of earnings. These differentials are maintained by the strict hiring and screening procedures adopted by large plants, and the allied restriction on the number of workers recruited by the large employer. This strategy will be complemented by a sound understanding within the large plant's personnel department of the aspects of the local labour market relating to wages, employment conditions and similar information required to accurately assess the plant's standing in the local labour market. The model of large plant personnel policy, therefore, suggests that despite widespread variations in earnings within the local labour market there is an economically justifiable and planned relationship between plants operating in the local labour market. Moreover, wage differentials between plants may still act as an allocative mechanism in direct response to the labour requirements of a particular plant.

Recognising the existence of other plants within the local labour market, and the ways in which they are related to each other through worker mobility, has implications for some of the predictions associated with the monopsony model and the inter-local labour market analysis of dominant plant behaviour. Of most importance is the observation that relatively high earnings in the dominant plant relative to other plants in the area will serve to offset the need for dominant plants to adopt recruitment methods designed to overcome monopsonistic pressures. Similarly, the earnings differential within the local labour market will reduce the severity of labour shortages induced by monopsonistic conditions. The possible absence of monopsonistic pressures in dominant plants does not imply that the feature is totally removed from the local labour market. Instead, theoretical considerations suggest that, paradoxically, monopsonistic influences may filter down the local labour market plant hierarchy so that their associated pressures are felt most severely by the smaller establishments in the area.

CHAPTER 5

THE RELATIONSHIP BETWEEN DOMINANCE, PLANT SIZE AND INTRA-LLM BEHAVIOUR: THE EMPIRICAL RESULTS

Chapter 4 demonstrated that theoretically the local labour market behaviour of dominant plants should be heavily influenced by the structural characteristics associated with establishment size. These influences are, in turn, reflected in the dominant plant's attitude towards personnel policy. Bearing this in mind this Chapter seeks to identify the impact of establishment size on dominant plant personnel policy using the information gathered from the questionnaire, and where appropriate contrasting the results with complementary evidence from other studies. In particular the influence of size on earnings, manpower quality, screening and hiring procedure, training policies, and unionisation are considered.[1]

It should be remembered that this part of the project, although it is of interest in its own right, is really of secondary importance when compared to the preceding inter-LLM analysis and the identification of monopsonistic influences. Consequently, the empirical analysis only briefly examines the various hypotheses under test. Nonetheless, the evidence collected and the conclusions drawn are sufficient to provide a relatively general, if not rigorous, interpretation of how dominant plants

---

(1) In this section of the analysis no attempt was made to generate a control group (see Appendix 2 for the problems this would have entailed). As an alternative, dominant plant respondents were explicitly asked to compare specific aspects of their behaviour with other firms in the LLM. In addition, and wherever possible, the results of other studies were also used as a proxy control group for the questionnaire returns. In this exercise large plants were defined as those employing over 1000. In some measure this threshold level must be arbitrary, but it is a figure used in previous studies seeking to identify size effects (for example see Eisele, 1973-74). That is, once a plant employs 1000 workers it often seems that the characteristics associated with size become evident. Ideally, of course, it would have been more appropriate to have a continuous rather than a discrete size variable, but such an approach was beyond the scope of this study.

behave within their LIM. On this basis it is also possible to suggest how the results may condition the previously tested hypotheses relating to monopsony.

1 THE IMPACT OF SIZE ON DOMINANT PLANT WAGES AND EARNINGS

One central proposition of Chapter 4 was that dominant plants, as a direct result of their large absolute size, will offer the highest level of earnings in the LIM. This hypothesis was initially tested by asking plants to estimate their relative position in the LIM wage hierarchy. The results of this exercise are shown in Table 5.1 and tend to confirm the propostion developed previously. For skilled male manuals 72% of the respondents paid above the average level of LIM earnings, 66% in the case of other male manuals, and 78% for female manuals.(2) By contrast, it follows that few firms paid their workforce below the LIM average, and indeed for skilled male manuals this was only reported on two occasions.(3)

The evidence examined so far has assumed that dominant plants set their own wages. However, Chapter 3 indicated that this is only partly true, and therefore there is a danger that the high wage phenomenon experienced by dominant plants is caused by features related to the central wage bargaining position rather than plant

---

(2) The tendency to pay amongst the highest was most prevalent in the skilled male manual group where 53% of the sampled plants were in this top category.

(3) It is significant to note, although the results are not presented here, that the tendency for the dominant plants to be over represented at the top of the LIM earnings league is higher than for the control group plants used in Chapter 3 (however, these differences are not significant). This probably reflects the structure of the respective LIMs and particularly that the control group LIMs are more likely to have plants of a similar size and hence a similar wage structure. As a result of such structural considerations the dominant plant operations will tend to be very much more in evidence at a LIM level. This posibility is examined in more detail in subsequent sections.

size. To overcome this problem Table 5.1 also analyses plants where wages (as measured by the basic rate) are determined locally. In this case dominant plants once again are clustered towards the top of the wage hierarchy. This is further evidence supporting the original hypothesis and suggests that centralised wage negotiations do not seem to alter the plant's standing within the LLM.

Additional evidence from Table 5.1 suggests that the decision by most dominant plants to pay above LLM earnings is taken deliberately, either as part of the establishment's overall LLM strategy or as a result of internal presures within the establishment. That is, the figures show all dominant plants bar one were aware, or thought they were aware, of their position in the LLM. Similarly, the evidence on the extent of wage surveys undertaken by dominant plants (see Chapter 3, footnote 8) indicates that the nature and extent of wage surveys undertaken by dominant plant management are both widespread and comprehensive. Over 50% of the dominant plants carry out wage surveys of other firms in the same industry operating in the same LLM, and 47% survey other firms in the LLM but not in the same industry. Considering the structure of dominated LLMs the combination of these two categories suggests that most dominant plants carry out some form of regular survey into LLM wages and employment conditions. The results of the analysis into the principal determinants of earnings also suggest that dominant plants are aware of the earnings of other firms in the area.[(4)] The table shows that labour recruitment and retention problems caused by the actions of other plants in the area and union pressure for comparability with other firms in the area both play a role in determining the levels of earnings in the plant. As a result dominant plants would be expected to monitor continually the behaviour of these firms if they have been identified as influencing the plant's LLM policies.

To futher assess the overall attractiveness of working in dominant plants questionnaire respondents were also asked about the

---

(4) See Table 3.8 in Chapter 3

level of fringe benefits offered by the plant in relation to other firms operating in the LLM. The results of this exercise have already been presented in the table discussed in footnote 5 of Chapter 3, and repeat the pattern followed by dominant plant earnings discussed above. In this case, 26 plants, 70% of the total sample, stated that they offered more extensive fringe benefits than other establishments operating in the area. Another 24% offered average fringe benefits, and only 2 plants reported offering below average fringe benefits.(5) Although a more accurate specification of the extent of dominant plant fringe benefits was beyond the scope and capability of the study, the questionnaire analysis nevertheless did measure the extent of non-pecuniary rewards in dominant plants for three important aspects of fringe benefits (see Table 5.2). The results showed that all dominant plants provided both a pension scheme and sickness benefits, and only one plant in the sample did not provide a sports and recreation club. Generally speaking this is above the level of fringe benefits provided by small and medium sized plants and may give some indication of the economies of scale associated with such activities.(6)

---

(5) It is worthwhile noting that the control group plants shown in the table did not consider themselves as providing such a relatively high level of fringe benefits. Again, this may reflect the structural differences between the LLM types. Alternatively, however, it may also indicate that dominant plant employers tend to favour fringe benefits as a means of boosting the total benefit package offered to the workers. Unfortunately, without further evidence it is difficult to substantiate this possibility. For further details on the issues involved see Norris 19 65.

(6) For example, see Reid and Robertson (1976) and MacKay etal (1971)

TABLE 5.1 THE PERCEIVED POSITION OF DOMINANT PLANTS IN THE INTRA- LIM EARNINGS LEAGUE

Dominant Plants Position in Earnings League	Total Sample			Plants where the Basic Rate is determined locally		
	Skilled Male Manuals	Other Male Manuals	Female Manuals	Skilled Male Manuals	Other Male Manuals	Female Manuals
Amongst the Highest	52.8	42.9	43.7	50	47.4	44.4
Above Average	19.4	22.9	34.4	25	26.3	33.3
About Average	22.2	25.7	18.7	25	21.1	11.1
Below Average	2.8	5.7	0.0	0	0	0
Amongst the Lowest	2.8	2.9	0.0	0	0	0
Dont Know	0.0	0.0	3.1	0	5.3	11.1
Total Number of Observations	36(100)	35(100)	32(100)	16(100)	19(100)	18(100)

Note: (i) The figures relate to the proportion of respondents falling into each category.

TABLE 5.2 THE PROVISION OF MAJOR FRINGE BENEFITS IN DOMINANT PLANTS

No & Proportion Offering Sickness Benefit Scheme	No & Proportion Offering Pension Scheme	No & Proportion Providing Sports & Social Club
36(97.3)	37(100)	36(97.3)

Overall, therefore, it appears from the available evidence that plant size influences earnings and other elements of the benefit package to such an extent that the dominant plants tend to be clustered at the top of the LLM wage hierarchy as predicted in Chapter 4. However, having identified the positive association between plant size and earnings, it is difficult to move a stage further and pinpoint the key labour market variables associated with size and which in turn influence earnings. Nonetheless, evidence from the questionnaire returns does suggest that the strong union presence in dominant plants may be one explanation of their wage policy (see section 5.5). Another potential explanation is the high quality labour recruited by these plants (see section 5.2).

Note also that as the available evidence supports the proposition that dominant plants offer the highest benefit package in the LLM this may also reduce the depressing effect monopsony has on dominant plant earnings. Although this offsetting effect will probably be minimal it should have a more pronounced effect on other monopsonistic aspects of dominant plant LLM behaviour, and in particular will serve to minimise labour shortages and the characteristic recruitment methods associated with these quasi-monopsonistic plants.

2 THE IMPACT OF PLANT SIZE ON DOMINANT PLANT MANPOWER QUALITY

A second predicted consequence of size for dominant plant personnel policy was that large plants tend to recruit high quality manpower to meet the demands associated with working in a relatively difficult environment.[7]

---

(7) See Chapter 3 and 4

This hypothesis on manpower quality is consistent with the evidence presented in Table 5.3, and Table 5.4. Table 5.3 focuses on the dominant plant's employment strategy for skilled male manuals and shows that 100% of the dominant plants in the sample employ silled workers with at least average, but often above average skill levels.(8) Similarly Table 5.4 shows that, for the other two work groups under review, dominant plants also appear to employ workers of average and above average quality.(9) However in this case, the tendency to hire workers of well-above average quality is not as pronounced as the pattern for skilled workers. In the case of skilled male manuals 46% of the plants employed workers of above average skills, whereas for other manual groups the figure fell to 19%.(10) These results, therefore, appear to support the hypothesis that dominant plants, in response to the structural characteristics associated with plant size, tend to recruit highly skilled and highly qualified manpower.(11)

---

(8) As expected, the same pattern is repeated in the control groups used in Chapter 3 but the results are not reported here since they are of limited interest.

(9) The distinction between highly skilled in the skilled male manual group and the high quality specified in the other manual groups reflects the way in which managers were considered to think about different sections of the workforce. In particular, all skilled workers are of a high quality almost by definition.

(10) Once again, and as expected, the same pattern is repeated in the control group generated for the inter-LLM analysis although the results are not reported here.

(11) To an extent this helps resolve the argument on whether large plants need to recruit a skilled and high quality workforce (see Chapter 3). However, due to the sensitivities involved it was not possible to determine specifically the internal pressures prompting dominant plants to adopt this policy. There is no reason, nonetheless, why the factors outlined in the theory Chapter should not be the principal determinants.

The dominant plants' decision to employ skilled and high quality workers, has implications for the plants' recruitment methods and screening techniques which, as a result, should be biased towards policies designed to select only the best available labour. Similarly, the apparent need for quality workers should also encourage management to increase the level of training in the plant.[12] Both these suggestions are examined in subsequent sections of this Chapter. The dominant plants' high manpower quality standards may also partly explain the shortages of skilled and high quality recruits identified in Chapter 3, although this reason was not explicitly highlighted in any of the dominant plant replies.

---

(12) See Section 4, Chapter 3.

TABLE 5.3 THE PERCEIVED LEVEL OF SKILLS IN DOMINANT PLANTS RELATIVE TO THE REST OF THE LLM FOR SKILLED MALE MANUAL WORKERS

Extent of Skill	Proportion of Plants in Each Category
Highly skilled	45.9
About average skill	51.1
Less skilled	0.0
No particular reputation	0.0
Don't know	0.0
total no of observations	37(100)

TABLE 5.4 THE QUALITY OF MANPOWER IN DOMINANT PLANTS RELATIVE TO THE REST OF THE LLM FOR NON-SKILLED WORK GROUPS

Level of Quality	Proportion of Plants in Each Category
Above average quality	18.9
About average quality	75.7
Less than average quality	5.4
No particular reputation	0.0
Dont know	0.0
Total no of observations	37 (100)

3 THE IMPACT OF PLANT SIZE ON DOMINANT PLANT SELECTION PROCEDURES

The combination of high earnings and the need to recruit quality labour suggests that dominant plant hiring standards should be both comprehensive and highly selective.(13) This section tests this hypothesis using the dominant plant questionnaire replies and by comparing the results with other similar studies into recruitment procedures. The study first examines the dominant plants' attitude towards the screening of potential recruits and this is followed by an investigation into the dominant plants' policy on hiring on-spec applicants.

3.1 Screening Procedures

Table 5.5 summarises the selection procedures followed by dominant plants when recruiting. The results are consistent with the hypothesis that all work groups are subject to several screening filters before being accepted or rejected by management. The screening procedure most widely used by dominant plants was personnel department interviews. For each skill group this procedure was used in over 90% of cases. Medical tests were the second most popular screening procedure, once again widely used by over 90% of respondent plants but of particular importance when recruiting female manual employees. Another important screening technique was for a plant foreman to interview potential recruits; over 75% of the dominant plants used this form of screening extensively. Other popular screening techniques included obtaining references from the applicant's previous employer, and (for skilled male manuals) interviews by non personnel management staff.(14)

---

(13) See Chapter 4, Section 2.

(14) Applicants for employment in dominant plants, therefore, have to pass through a relatively stringent series of screening processes before being accepted as suitable employees. However, in view of this it is surprising that so few applicants are subjected to any formal test of skill or competence. This screening procedure was used by only 11% of dominant plants when recruiting skilled manual workers and was rarely considered by any of the establishments when screening unskilled or semi-skilled manual workers.

TABLE 5.5 DOMINANT PLANT SELECTION PROCEDURES

	Proportionate Use of Selection Method by Skill Groups								
	Skilled Male Manuals			Other Male Manuals			Female Manuals		
	rarely used	occasionally used	often used	rarely used	occasionally used	often used	rarely used	occasionally used	often used
Interviewed by foreman	9.4	6.2	84.4	17.2	6.9	75.9	21.4	3.6	75.0
Interviewed by member of the personnel department	0	2.8	97.2	0	5.6	94.4	0 0	9.4	90.6
Interviewed by other managerial staff	18.7	18.2	63.6	42.9	32.1	25.0	58.3	16.7	25.0
Formal test of skill or competence	35.1	27.0	10.8	79.2	20.8	0	76.2	23.8	0
Obtain reference from previous employers	12.9	25.8	61.3	16.1	29.0	54.8	22.2	22.2	55.6
Medical test	5.7	2.9	91.4	5.7	2.9	91.4	3.2	0	96.8

Although the relative importance of the different screening methods are the same for the three categories of employee there are differences between the work-groups in the extent to which individual procedures are used. The most important distinction between screening procedures for skilled male manual workers and the other two groups was that the dominant plants generally screen the skilled candidates more intensively than the other manual employees. This is true for five of the six screening methods listed in Table 5.5 and highlights the greater concern of the plants to ensure that they recruit suitable candidates for jobs requiring above average skill levels (see Section 5.2). Accepting this interpretation of plant behaviour suggests that the dominant plants' policy may be considered as rational and reflecting the costs and benefits of selecting appropriate recruits for each category of employment. (15) (16)

It is difficult to establish whether the screening methods used by the dominant plants can justifiably be described as intensive as there are no control group statistics available to allow adequate comparison. Moreover, since little specific research has been undertaken on small and medium sized plant selection procedures it is also not possible to use a previous study as a proxy control group. Nonetheless, it is feasible to establish whether any of the more generally based LLM studies seem to offer support for the original hypothesis. For example MacKay etal (1971, P360) found that the selection procedures employed in their sample of firms in Birmingham and Glasgow were as follows;

(15) For example, intensive screening of female manual employees would be of limited value as this is generally a high turnover relatively homogeneous work group with its quit rate being partly determined by family influences and other factors outside the control of the plant.

(16) Table A17.9 in Appendix 17 shows an "average screening index" for dominant plants which confirms the hypothesis that screening is most intensive for skilled male manuals, less intensive for other male manuals, and lowest for female manuals. The differences between the groups are statistically significant at a 95% confidence interval for the following work group pairs:

> "Few plants in these two conurbations applied any formal test at the first stage of selection, and decisions as to the short list were made by the personnel officer on the basis of his ability to gauge suitability through a short, often informal, interview. It seldom fell to the personnel officer to attempt any judgement of skill and technical competence. Instead, factors such as age, personal appearance, colour and previous employment experience were the hiring standards applied in this initial screening process. Formal tests of technical competence and proficiency were also rare at the second stage. The foreman usually deciding whether the individual possessed the necessary degree of experience or ability by ascertaining his previous job experience, and, at this stage also, subjective assessments were extremely important".

The evidence presented by this study seems to be basically similar to the findings in Table 5.5. As a result there is no direct evidence to support the proposition that large plant selection procedures are more rigorously applied than the policies adopted by others. Unfortunately, it is difficult to be any more precise on this since the size distribution of plants in the MacKay study is unknown, so it is not clear that this study reflects the behaviour of relatively small units.

3.2 Handling of on Spec Applicants

Another postulated characteristic aspect of dominant plant screening procedures concerns the attitude adopted by management when dealing with on-spec applicants for employment. It is considered that this should be an important feature of dominant plant selection procedures if the relatively high benefit package associated with these establishments succeeds in attracting a large number of on-spec applicants. That is, to benefit most from this situation dominant plants should develop and maintain an efficient mechanism for dealing with on-spec applicants.

---

(16) cont.

(i) between skilled male manuals and other male manuals, and skilled male manuals and female manuals in the dominant group

(ii) between skilled male manuals and other male manuals and skilled male manuals and female manuals for the combined samples (that is where the non-dominant large plants are included).

Table 5.6 shows that whether a list of on-spec applicants is kept by dominant plants depends to some extent on the skill group involved. For skilled male manuals only 11% of firms failed to record details of on-spec applicants. For other male manuals and female manuals the number increased to 22% and 21% of plants respectively. The nature of information collected also varied according to skill groups. Although the same proportion of plants kept details of only the most suitable applicants for all work groups, a higher proportion of the sample kept details of all skilled male manual on-spec applicants. This bias towards skilled male manual probably reflects the shortages experienced by the dominant plants for this type of worker.

TABLE 5.6 DOMINANT PLANT METHODS OF DEALING WITH ON-SPEC APPLICANTS

	Porportional Use of On-Spec List by Skill Group		
	Skilled Male Manuals	Other Male Manuals	Female Manuals
No details of on spec applicants kept.	10.8	21.6	20.6
Details of most suitable applicants only kept.	43.2	40.5	43.2
Details of almost all on-spec applicants kept.	43.2	35.1	29.4
Other	2.7	2.7	2.9
Total no of observations	37(100)	37(100)	34(100)

TABLE 5.7 REASONS WHY NO ON-SPEC LIST KEPT BY DOMINANT PLANTS

REASON WHY NO ON-SPEC LIST KEPT	FREQUENCY
High unemployment in the area would make the list uncontrolable	2
All applicants are channelled to the Job Centre	4
Require formal application	1
Long waiting list	1
Recruitment depends on internal recommendation	1
List becomes obsolete quickly	1
Total	10

The reasons why some dominant plants chose not to keep a list of on-spec applicants are presented in Table 5.7. The most important reason was a preference by the plant for applicants to be channelled through the local Job Centre which would then undertake the initial screening on the behalf of the plant. Other explanations, although of minor importance, included: high levels of unemployment making an on-spec list unworkable; an already long waiting list for employment in the dominant plant; a policy by management to insist on formal applications; a dependence on internal recommendations; and a tendency for such a list to become obsolete quickly.

Returning to the majority of plants that actually maintain a list of on-spec applicants Table 5.8 indicates the principal ways in which the plants use this list. One characteristic of the table is that, once again, the nature and intensity of use differs between skill groups. Although in several firms the procedure varies, or there is no clear pattern when using the list, there is a tendency for dominant plants when recruiting skilled workers to contact the best qualified and most skilled applicants on their list. Approximately 69% of the sample used this method when selecting applicants. That is, skilled workers on the list were generally selected on the grounds of ability. Contacting the best qualified workers is also the most popular selection procedure in the other categories of employment, but in this case the tendency is less pronounced with only 36% of the firms using this technique to recruit workers. Therefore, for other male manuals and female manuals, plants vary their selection methods to a greater extent, and often there is no clearly observable pattern in their procedures for recruiting on-spec applicants. Overall, then, the policies followed by dominant plants in this case are not geared to such an extent to selecting the best qualified applicants. This suggests that other male manuals and female manuals are more homogeneous groups with quality differences being of only marginal importance.

TABLE 5.8 DOMINANT PLANT USE OF THE ON-SPEC APPLICANTS LIST

Use of on Spec List	SKILL GROUP		
	Skilled Male Manuals	Other Male Manuals	Female Manuals
Make very little use of list	0	3	4
Contact most recent on-spec applicants on list	3	7	4
Contact appliants on list who have been on it for the longest time	0	10	12
Contact best qualified/most skilled applicants on the list	68	35	36
Varies, no clear pattern	12	28	32
Combination of above	15	14	12
Total number of observations	32(100)	28(100)	25(100)

Within the context of the original hypothesis it appears that both the setting-up and the use of an on-spec list tends to support the idea of the dominant plant as the leading employer within the LLM. In particular, the evidence seems consistent with the view that dominant plants tend to offer a relatively high wage rate in the LLM. This in turn attracts labour to the plant and the employer is then able to select the most promising recruits from the resultant excess supply of applicants. The key point to note is that the dominant plant does not recruit all the workers it attracts but rather maintains a list of applicants from which it may select the most appropriate candidate when a vacancy arises. It would appear, therefore, that dominant plants do not offer higher wages simply to increase their share of LLM employment. Instead, they use this mechanism as part of the process of ensuring they recruit labour of sufficient quality to handle the particular characteristics associated with working in a large plant.[17]

4 THE IMPACT OF SIZE ON DOMINANT PLANT TRAINING

The hypothesis under test in this section is that through a series of scale economies and a need for highly trained workers it seems likely that dominant plants will have a higher propensity to train than smaller firms operating in a similar LLM environment.

To a large extent this hypothesis has already been supported in the inter-LLM analysis of dominant plant and control group training programmes (see Chapter 3 Section 4) which showed that very nearly 100% of the plants undertook comprehensive training programmes with particular emphasis on the training of skilled and semi-skilled workers and management grades. To complement this result, and on the basis of data adapted from another study, it is possible to be more specific and directly compare the dominant plants' propensity to train with the policy adopted by smaller plants. The results of this exercise are presented in Table 5.9.[18] The figures indicate that for every work group dominant plants provide significantly more training than any of the three categories of small and medium sized firms shown in the table. Indeed it is possible to identify a clear training gradient

---

(17) See Bronfenbrenner (1956) for more detailed analysis of dominant plant bahaviour in this respect. Note also that this model of queuing is in many respects similar to the model of job competition developed by Thurow (1975, Chapter 4) whereby employers will rank prospective recruits according to the match between their background characteristics and the partly unique job requirements.

(18) The comparitive data is taken from a study of training practises published by Urwick Orr and Partners (1965).

associated with plant size. That is, as plant size increases the scope and intensity of training also increases and serves to support the hypothesis outlined in the previous chapter.(19) (20)

TABLE 5.9 PLANT SIZE TRAINING HIERARCHY

Worker Category	0-100		101-500		501-1000		Dominant Plants	
	No	%	No	%	No	%	No	%
Apprentice	7	64	33	61	42	91	36	97
Post Apprentice	1	9	4	7	16	35	32	86
Skilled	-	-	7	12	2	4	33	89
Semi-Skilled	1	9	6	11	5	11	33	89
Unskilled	-	-	8	15	3	7	24	65
Clerical	-	-	8	15	16	35	32	86
Technical	2	18	12	22	25	54	33	89
Supervisory	-	-	12	22	20	43	36	97
Management	-	-	9	17	14	30	34	91
No of firms in sample	11	100	54	100	46	100	37	100

(Column group heading: Plant Size Hierarchy)

Note: (i) Source of Non-Dominant Figs: Urwick-Orr (1965)

Highlighting intra-LLM training differences more specifically, but on a more subjective basis, Table 5.10 shows the dominant plant's assessment of its contribution to training in relation to the rest of the LLM. The table shows that 70% of the plants considered that they provide a level of training above the LLM average; 16% of the

---

(19) Although monopsonistic considerations account for part of this difference as Chapter2 and Chapter 3 showed, under these circumstances this effect will be insignificant and much of the observed differences may still be attributed to size.

(20) This comparison, of course, assumes that the engineering industry is a fair representation of the training patterns in manufacturing and that the propensity to train has not changed since 1965.

plants estimated that they provide an average amount of training; not one considered that it provided a level of training below average; and four firms had insufficient information to assess their position. These results, therefore, are also consistent with the hypothesis that dominant plants provide a relatively high amount of training in relation to other smaller plants in the LLM.

TABLE 5.10 EXTENT OF DOMINANT PLANT TRAINING RELATIVE TO THE REST OF THE LLM

Extent of Training	Proportion of Dominant Plants in Each Category
More than average	70.3
About average	16.2
Less than average	2.7
Dont know	10.8
Total number of observations	37(100)

The high propensity to train displayed by dominant plants also relates to several other aspects of dominant plant personnel policy as Chapter 4 suggested. To recap, the intensity of training activities may partly explain the high level of earnings in dominant plants since plants investing in training will have an economic incentive to offer a higher level of earnings thereby reducing quits in the plant and allowing the firm to amortize its investment over a longer time period.(21) The higher level of training in dominant plants may also be considered as a response to the skilled labour shortages faced by many such plants. Indeed Table 3.14 showed that increased training was one of the most favoured methods of easing labour shortages with over 54% of the firms using this technique as a method of adjusting to manpower imbalances. Finally, the high level of training in dominant plants, and its associated cost to the establishment, also helps explain why the plants carefully screen potential recruits. Detailed assessment helps lower dominant plant

(21) Unfortunately, it was not possible to gather sufficiently detailed data on quit rates to compare the dominant plant averages with other smaller establishments. The lack of any other compatible survey also meant that it was not possible to use such results as a proxy control group.

quit rates, and as a result will further enable the establishment to protect its investment in training. In all, therefore, the suggestion that dominant plants have a high propensity to train is also consistent with the empirical evidence on the variables such a policy decision will have a direct influence on.

5. THE IMPACT OF PLANT SIZE ON DOMINANT PLANT UNIONISATION

It was proposed in Chapter 4 that dominant plants, as a result of their large absolute size, would also tend to be heavily unionised. Table 5.11 strongly indicates that this appears to be the case and hence supports the original hypothesis. In more precise terms the average level of unionisation in dominant plants is 98% for skilled male manuals, 97% for other male manuals, and 87% for female manuals. This compares with an average level of unionisation in UK manufacturing industry of 62%. Although monopsonistic pressure offers some explanation of the result the differences are too large to totally explain the high levels of unionisation.(22) (23) (24)

TABLE 5.11 UK VERSUS DOMINANT PLANT LEVELS OF UNIONISATION

Average Level of Unionisation in UK Manufacturing Industry	Average Level of Unionisation for Dominant Plants	Dominant Plant Unionisation for Skilled Male Manuals	Dominant Plant Unionisation for Other Male Manuals	Dominant Plant Unionisation for Female Manuals
62.2%	94%	98%	97%	87%

Note: (i) Figures taken from Price and Bain (1976)

---

(22) See Chapter 3, Section 5.

(23) To avoid any danger of bias the steel and coal results were taken out of the sample and the average recomputed. However, as Table A.17.10 shows this does not materialy alter the picture.

(24) The mechanism by which the unions influence wages is the collective bargaining process. As Table 3.6 shows the most important elements of collective bargaining and wage determination are not focussed at plant level. Consequently, the impact of local union pressure on earnings will tend to be constrained.

The higher levels of unionisation in dominant plants will probably influence a wide range of factors associated with dominant plant personnel policy, but unfortunately using the questionnaire approach it is generally difficult to either identify or estimate these effects. However, one of the few areas where it is possible to at least tentatively identify the impact of unionisation is in wage determination. In this case, and as Table 5.12 shows, unions tend to influence wages through the nature of comparisons they make with other plants. The most important comparison is between earnings in the dominant plant and other plants in the same company or group. The pressure for comparability with similar firms in the industry is the next most important comparison. By contrast, compatability with other LLM and non local firms is not as important.[25] As Table 5.13 and Table 5.14 show unions also appear to have an influence on the most important aspects of fringe benefits in instances where these issues are in some measure determined at plant level. For example, in the case of sickness benefits it appears that unions were involved in negotiations with all but one of the dominant

TABLE 5.12 UNION INFLUENCES ON DOMINANT PLANT EARNINGS

Nature of Union Influence	Proportion of Responses Falling Into Each Category				
	Very Important	Important	Quite Important	Of Little Importance	Not Important
Union pressure for compatability with other firms in the area	0.0	14.3	25.7	34.3	25.7
Union pressure for compatability with firms in the same industry but different LLM	14.7	14.7	17.6	23.5	29.4
Union pressure for compatability with other plants in the same company	24.2	18.0	24.2	12.1	21.2
Union pressure for compatability with other firms not in the same area or industry	0.0	3.2	9.7	38.7	48.4

TABLE 5.13 THE DETERMINATION OF SICKNESS BENEFITS: THE INFLUENCE OF UNIONS

	Proportion of Responses Falling Into Each Category		
Negotiation Method	Sickness Benefit Eligibility	Level of Payment	Length of Time Benefit Paid
Collective Agreement	53.6	43.2	37.8)
Management Discretion	2.7	2.7	2.7
Combination	2.7	2.7	5.4
Not Determined at the Plant	54.1	51.4	54.1
Total no of observations	37(100)	37(100)	37(100)

TABLE 5.14 THE INFLUENCE OF UNIONS ON DOMINANT PLANT PENSION SCHEMES

	Proportion of Responses Falling Into Each Category	
Negotiation Method	Benefit Eligiblity	Level of Payment on Pension
Collective Agreement	16.7	16.7
Management Discretion	2.8	2.8
Combination	2.8	2.8
Not Determined at Plant Level	77.8	77.8
Total no of Observations	36(100)	36(100)

(25) In some areas of dominant plant personnel policy union influence appears to be minimal, for example unions were rarely sited as causing recruitment problems or labour shortages.

plants, and the negotiations covered the eligibility of workers for fringe benefits, the level of payment, and the length of time the payment covers. The pattern is repeated for dominant plant pension schemes where once again collective agreements play the major role in determining both the eligibility and level of the pension scheme operated in dominant plants. It should be noted, however, that in this case pension conditions are mostly not determined at plant level and this will, of course, limit union activity.

In summary, then, it does seem that plant size influences levels of unionisation, and therefore unions are relatively well represented in dominant plants. Moreover, there is evidence to suggest that the strong union presence ultimately influences the level of earnings and fringe benefits in the dominant plants.

6. SUMMARY AND CONCLUSIONS

Despite the absence of a tighly specified control group it is still possible to identify how dominant plants relate to the rest of the LLM by using the questionnaire data and, where possible, relating this information to previous labour market research. In general the results of the analysis suggest that within the LLM dominant plants exhibit characteristic behaviour patterns and these seem to reflect the large absolute size differences between dominant plants and other LLM employers. In most cases the results support the theoretical propositions put forward in Chapter 4, and when combined produce an economically consistent and rational explanation of dominant plant attitudes and behaviour. However, given the nature of the research it is not possible to specify the ways in which the obviously interrelated variables influence each other.

One of the first results of the analysis showed that dominant plant wages and earnings were generally higher than other plants in the LLM. From the available evidence this feature of dominant plant behaviour appeared to be a strategy deliberately promoted and maintained by management. Moreover, the questionnaire results and other considerations also suggested that the high wage policy was the result of the structural characteristics associated with plant size.

The high wage strategy generally followed by dominant plants also appeared to have direct implications for other aspects of personnel policy. For example, the questionnaire evidence suggested, that as a result of their high wage policy, dominant plants were able to recruit and retain workers of above average quality. Similarly, the dominant plants also appeared to recruit workers of a higher skill level. A combination of the above average earnings package and the high quality and skill requirements also seem to influence dominant plant hiring procedures. More specifically, in most cases it appeared that there was a well organised waiting list of applicants willing to work in dominant plants. From this "queue" dominant plants were able to select the most promising recruits through a series of screening processes. Unfortunately, it was not possible to conclude whether these screening procedures were any stricter than other plants operating in the LLM.

Dominant plant training policies also appear to differ markedly from other LLM plants in that the dominant plants generally provided a relatively high level of training. This supports the argument about the considerable economies of scale in training captured by dominant plants and the need for such plants to maintain the quality and skill of their labour force. The high level of training provided by dominant plants is probably also influenced by the dominant plants' relatively high wage rates, in that dominant plants can be confident that trained workers will be reluctant to quit to move to a plant offering superior earnings.

Lastly, the level of unionisation in dominant plants appeared to be higher than in smaller plants, and this again seems to reflect the structural characteristics associated with plant size. The high levels of unionisation, in turn, appeared to influence other aspects of dominant plant personnel policy including the nature of collective bargaining and as a consequency the level of earnings and fringe benefits.

In a more general sense the model of dominant plant intra LLM behaviour tends to support a somewhat modified but nonetheless basically competitive explanation of labour market bahaviour. Each policy adopted by the dominant plants has a valid economic interpretation based on the plant's interrelated and often complex requirements to operate efficiently within a constrained LLM environment. That is, the dominant plants are reacting to the conditions imposed by their relatively large absolute size in the most economically efficient manner.

Bearing this result in mind it also seems reasonable to suggest that the relationship between the dominant plant and the other plants in the LLM may well have important implications for the monopsony model. In particular, the position of the dominant plant as the LLM's wage leader may serve to reduce the depressing impact of monopsony on dominant plant wage. Similarly, the leading position of the dominant plant in the LLM wage hierarchy may also help to alleviate the shortage problems associated with monopsony. This, in turn, should pre-empt the need for dominant plants to use recruitment methods specifically designed to overcome supply inelasticities.

Having said this, perhaps it is ample testament to the importance of monopsony that despite the implications of the size effect for dominant plant behaviour its influence still appears to affect dominant plant behaviour. Note also that, somewhat paradoxically, this result does not necessarily imply that monopsonistic conditions are relaxed in such LLMs since it may in fact be the case that it is the smaller firms in the LLMs which actually suffer more acutely from the problems associated with monopsony. Unfortunately, investigating whether this is the case is beyond the scope of this study. Nonetheless, the point remains worthy of further attention.

CHAPTER 6

A THEORETICAL MODEL OF THE RELATIONSHIP BETWEEN LABOUR MARKET DOMINANCE AND LOCAL LABOUR MARKET EFFICIENCY

This second part of the research approaches the analysis of dominance from a broader perspective than the method adopted in Chapter 2 to Chapter 5. Rather than examining the behaviour of the dominant plant, and subsequently contrasting its behaviour with other establishments, this part of the study extends the analysis by focusing on the overall performance and efficiency of dominated LLMs. In particular, this aspect of the research examines the behaviour of unemployment and vacancy rates in dominated LLMs.

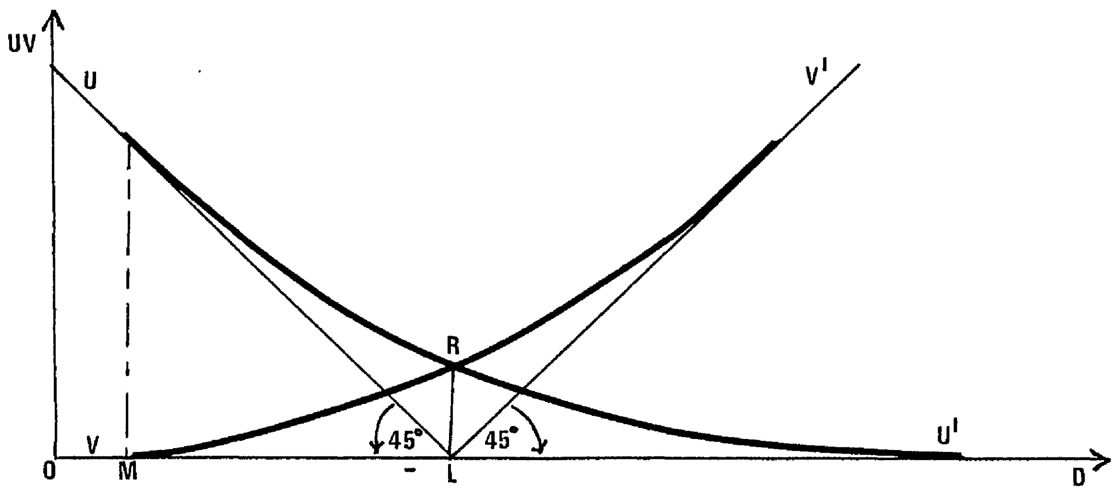
To establish the theoretical framework for such a study this Chapter is divided into two sections. The first section examines in some detail the theoretical measures of LLM efficiency based on unemployment and vacancy figures. The second section then uses these previously developed measures of performance to explore possible relationships between LLM dominance and LLM efficiency. This discussion also considers the influence other LLM features may have on performance so that their impact may be controlled for when trying to empirically isolate the impact of dominance.

1 THE DERIVATION OF THE UV CURVE AND ITS ASSOCIATED MEASURES OF LLM EFFICIENCY

In a perfect LLM, characterised by homogeneous labour, perfect mobility and perfect information the relationship between unemployment and vacancies may be derived by examining the influence different levels of labour demand have on the two variables. The relationship is presented graphically in Diagram 6.1 by mapping labour demand against both unemployment and vacancies. As the diagram shows at low levels of demand, and in particular at the origin of the demand axis, unemployment is high and vacancies do not exist. As the demand for labour increases unemployment will fall in a one-to-one ratio until full employment is reached at the point L.

Over the range OL vacancies will not exist because of the assumptions about perfect mobility and perfect information. Above the full employment level if demand increases the number of vacancies will increase on a one-to-one ratio, whereas unemployment will remain at zero, itsminimum value.(1)

DIAGRAM 6.1 THE DERIVATION OF UV CURVE



Adapted from Brown (1976)

VLV^1 = Plot of vacancies in a perfect labour market
ULU^1 = Plot of unemployed in a perfect labour market
VRV^1 = Plot of vacancies in an imperfect labour market
URU^1 = Plot of unemployed in an imperfect labour market
L = Full employment

This over-simplified theoretical picture of the relationship between unemployment and vacancies changes when labour market imperfections are introduced. As before, when demand picks up from a position of high unemployment all newly available employment will be quickly taken up by the large pool of unemployed. Consequently, the average duration of the vacancy will be short and the stock of vacancies will be minimal. However, as demand increases and the level of unemployment continues to fall, employers will find it more

(1) For simplicity this model ignores the additions to the labour force resulting from increased demand in the market.

difficult to secure an adequate supply of labour and it will become increasingly common for a mismatch,both qualitatively and geographically, to occur between job vacancies and the unemployed. This tendancy will be further reinforced by imperfections in LLM job information. As a result a stock of vacancies will appear before full employment is reached, and this is represented in the diagram by the broken line MRV^1. That is, in practice the vacancy line will tend to rise from the horizontal axis far short of the full employment point L and merge into the original vacancy line far beyond it. A similar situation applies to the unemployed, in that once market imperfections are introduced unemployment will not fall in a one-to-one ratio with every job created by higher levels of demand. Therefore, in terms of the diagram unemployment will tend to diverge from the UL 45^o line before L and merge into the horizontal axis well beyond it as unemployment becomes decreasingly sensitive to changes in demand. In the diagram this is represented by the URU^1 line.(2)

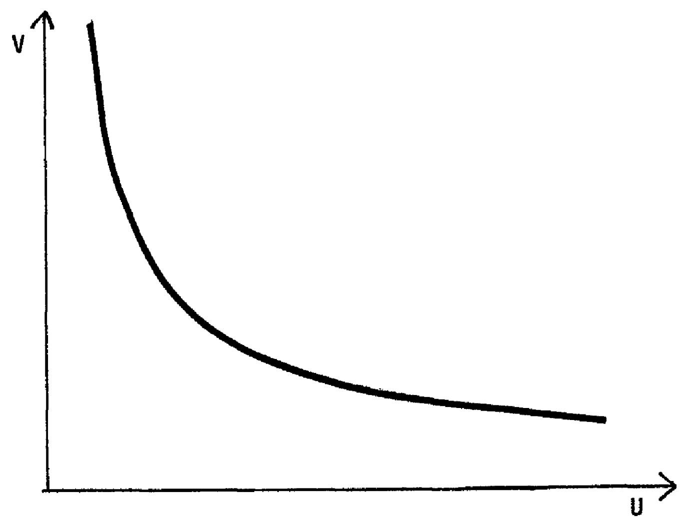
From this more realistic model of UV behaviour the relationship between unemployment and vacancies can be calculated by reading off the relevant values of the two variables at different levels of demand. The result is a relationship similar to that shown in Diagram 6.2.

---

(2) See A J Brown (1976) for a more detailed analysis of the derivation.

In algebraic terms this function may be represented by the equation $U = AV^B$ which in log terms equals $\log U = \log A + B \log V$.[3] That is, the UV function is log linear.[4]

DIAGRAM 6.2 THE UV CURVE



(3) It is not strictly correct to state that the UV relationship can be represented by an equation of the form $U = AV^B$ since the point where U = V does not lie on a curve of that nature but rather is a point where the seperate curves join (see Diagram 6.1). In fact the function traced out by Diagram 6.1 can only be calculated by using switching regressions, an econometric technique well beyond this study. Conveniently, however, an equation of the form $U = AV^B$ is a very close approximation to the true nature of the curve and the difference will be marginal.

(4) Although not of concern here it may also be possible to observe loops in the UV relationship depending on whether the local economy was expanding or contracting. Indeed, recent contributions to UV research seems to suggest that loops may indeed form part of a much more involved model of UV behaviour. See, for example, Hyman & Palmer (1980) and Bowden (1980).

From the UV diagram it is possible to develop measures of LLM performance and efficiency. By distinguishing between the different categories of unemployment it is possible to identify from the UV equation.[5] In particular, by estimating the level of non-demand deficient unemployment (Und) it is possible to identify the maximum level of unemployment resulting from LLM imperfections which may then subsequently be used as one indicator of the efficiency of the LLM.

DIAGRAM 6.3 THE UV EQUATION AND THE CLASSIFICATION OF UNEMPLOYMENT

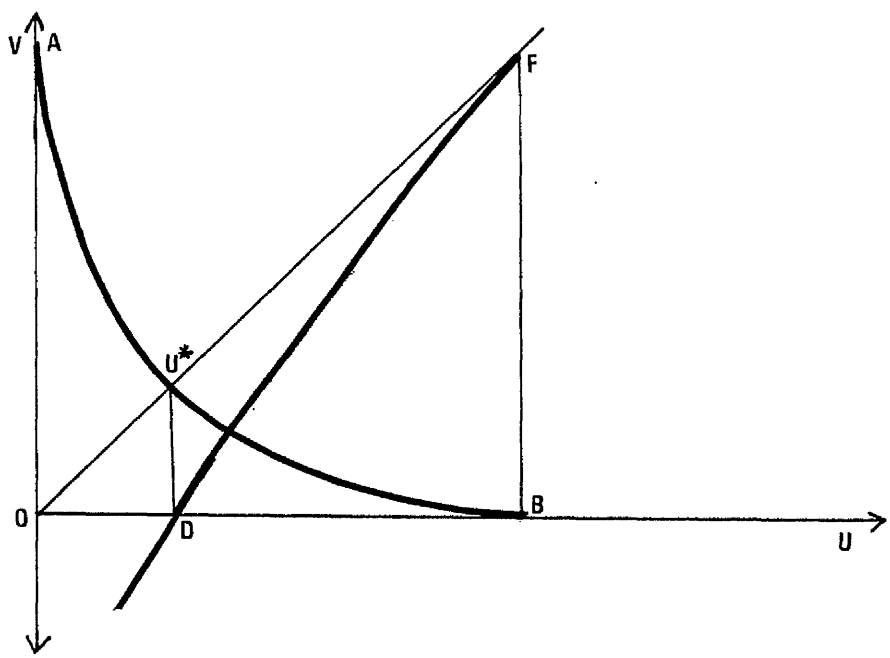


Diagram 6.3 illustrates how non-demand deficient unemployment is derived from the standard UV diagram. Take AU*B as the best fit line through the observed values of unemployment and vacancies. OF is a 45° line cutting AU*B at U*. This is the point where U = V and

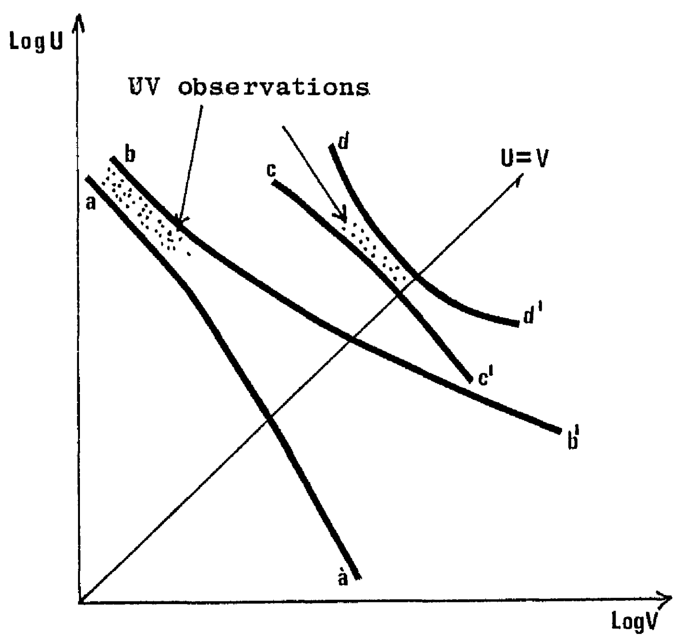
(5) Appendix 14 explains the distinction between the different categories of unemployment, In particular it distinguishes between demand deficient unemployment and the two components of non-demand deficient unemployment; structural unemployment and frictional unemployment.

as a consequence demand deficient unemployment (Udd) is zero.[6] From the diagram the maximum value of Udd is where V = O, the point B in the diagram. Therefore, between OD and OB, Udd runs from its mimimum to its maximum value and this is traced out by the line DF. Non-demand deficient unemployment comprises structural (Us) and frictional (Uf) unemployment, and up to the point D is represented by the distance between the U = V line and either axis. That is, all unemployment is either structural or frictional because unemployment is less than total vacancies. At higher levels of unemployment above D, Und equals the difference between total unemployment and Udd, which is represented by the difference between the lines of OF and DF. Therefore, from the geometry of the diagram it is obvious that Und reaches its maximum value when V = U, that is, at U*. As a result, by measuring U* for any LLM the maximum level of Und can be calculated. Moreover, since U* measures the extent of unemployment caused by labour market imperfections (Us plus Uf), it is possible to measure LLM efficiency directly in that the closer U* lies to the origin then the more efficient the LLM becomes since the coexistance of unemployment and vacancies is reduced. The particular significance of the U* measure is that it provides a comparable measure of LLM's efficiency which is independent of the level of demand prevailing in a market at any particular time.

(6) See Appendix 14. That is, this is the point where labour supply (U) equals labour demand (V).

Occasionally in practise the U* measure of efficiency will be difficult to estimate since in some cases the UV observations will not cross the U = V line and, depending on their distribution, it may be tenuous to calculate an extrapolated estimate of U*. This problem is illustrated in Diagram 6.4 which shows the underlying nature of the confidence intervals (the lines aa^1, bb^1, cc^1 and dd^1) for determining U* based on an observed cluster of UV points. The figure shows that the further away the observed UV values lie from the U = V line then the greater the range of values U* may fall within when extrapolating. That is, the further the observed UV points lie from the U = V line then the wider the possible variation in the value of the estimated value of U*. Another problem with the U* measure concerns LIMs where the log A term is insignificantly different from zero, assuming that for simplicity the UV equation is run in its log form. Converting this result into natural numbers implies that the value of the constant terms equals one which means that any equation, irrespective of its B value, will cut the U = V line at the coordinate (1,1). Under these circumstances it may not be possible to differentiate between the efficiency of different LIMs as measured by U* with an insignificant constant term.

<u>DIAGRAM 6.4 AN ILLUSTRATION OF CONFIDENCE LEVELS ASSOCIATED WITH EXTRAPOLATING UV OBSERVATIONS</u>



As a result of these considerations on occassion it will be more convenient to use an alternative measure of LLM efficiency; the elasticity of vacancies with respect to unemployment. Using this measure the most efficient type of LLM will be those with a high negative elasticity indicating that any increase in demand will have a significant impact on unemployment without a simultaneous and equally large increase in vacancies (see Cheshire, 1979).(7) Conveniently, given the functural form of the UV equation, the elasticity of the function is a constant equal to B, which is the coefficient of the dependent variable in the log linear form of the UV equation.(8) Another way of looking at the elasticity of the UV function is shown in Diagram 6.5 which relates the curve to the original demand based illustration. In this case where two UV curves with equal constants are compared (the lines erf and etf) the UV curve with the most negative elasticity (etf) lies closer to the most efficient path as traced out by the demand based diagram. That is, ETF lies closer to EOF than ERF. This means that the UV curve represented by etf has fewer mis-matches or problems associated with information deficiencies or adjustment lags. Therefore, rather than considering B as the UV curve's elasticity it may also be thought of as the coefficient that determines how close the observed UV points approach the optimum path (EOF) as illustrated by the demand based model.

---

(7) The diagram below shows how the elasticity measure of efficiency distinguishes between LLMs where log A is insignificant. That is, in this case the slope is more negative in the more efficient market (UV line aa') although both UV curves have the same value for U*.

(8) Given that the standard equation is $U = AV^B$ the elasticity of the function is:

$$\frac{du}{dv}\left(\frac{V}{U}\right)$$

$$= ABV^{B-1}\left(\frac{V}{U}\right)$$

$$= ABV^{B-1}\left(\frac{V}{AV^B}\right)$$

$$= B$$

Note also that where U = V (that is, U*) the B value is equal to the derivitive and therefore measures the absolute rate of change of unemployment compared to vacancies.

For expositional purposes the two UV curves mentioned above (erf and etf) and illustrated in Diagram 6.5 were assumed to have equal constant terms. However, in practice there is no reason why this should be the case, and in fact the constant itself as measured by A in the UV equation, can also be considered as a measure of LLM efficiency since this specifies the level of demand at which imperfections begin to appear in the labour market. For example, in Diagram 6.5 the UV curves asb and erf both have similar elasticities but different constants. That is, asb is further displaced from the origin. Tracing this back to the demand based figure shows that in the case of asb the appearance of LLM imperfections started at point x which is a lower level of demand than the erf curve, where imperfections only begin at point w. Therefore, using this measure of LLM efficiency asb is more inefficient than erf. As a result, and other things being equal, the efficiency of the LLM is also dependent on the constant term which is another way of saying that performance reflects the level at which demand imperfections begin to appear in the LLM.(9) (10)

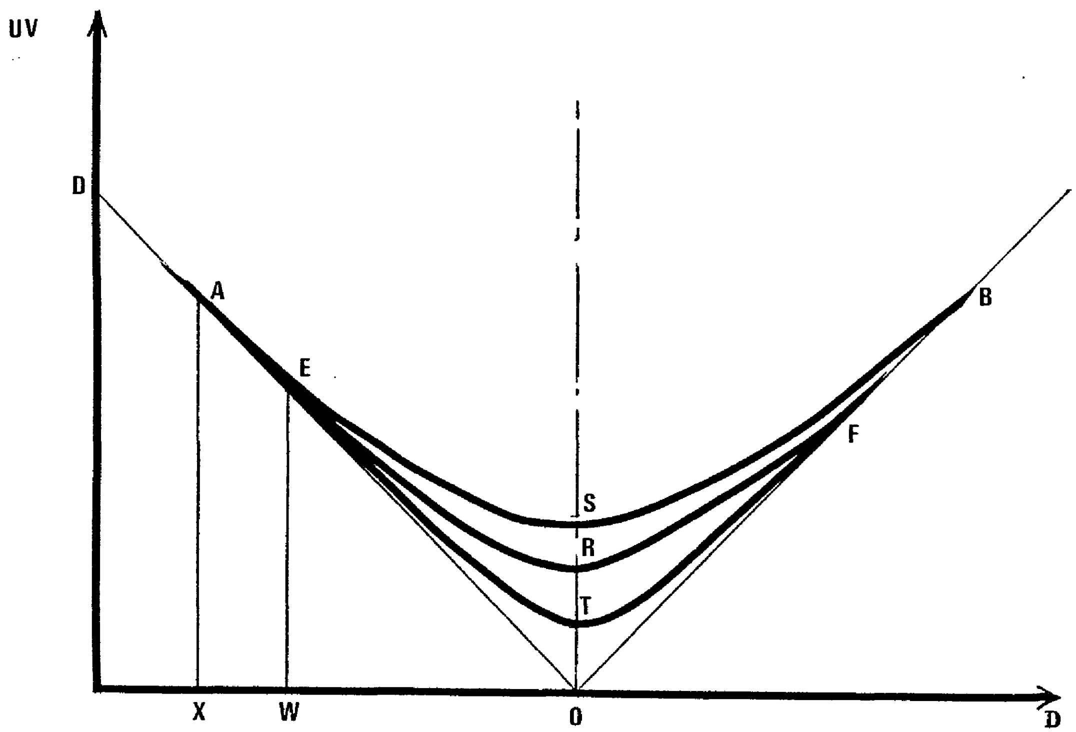
Although the elasticity and the constant terms in the UV equation may be considered as alternative measures of LLM efficiency they also have their shortcomings. Firstly, like the U* measure, both these indices are subject to measurement errors. Secondly, for either of these measures to be meaningful the other has to be held constant a procedure which severly restricts the ability to make

(9) Another measure of efficiency would be to examine the leads and lags associated with changes in demand at a local labour market level. That is, the faster a LLM unemployment rate responds to a change in vacancies then the more efficient the LLM. Unfortunately, measuring these responses with sufficient accuracy was beyond the scope of the research.

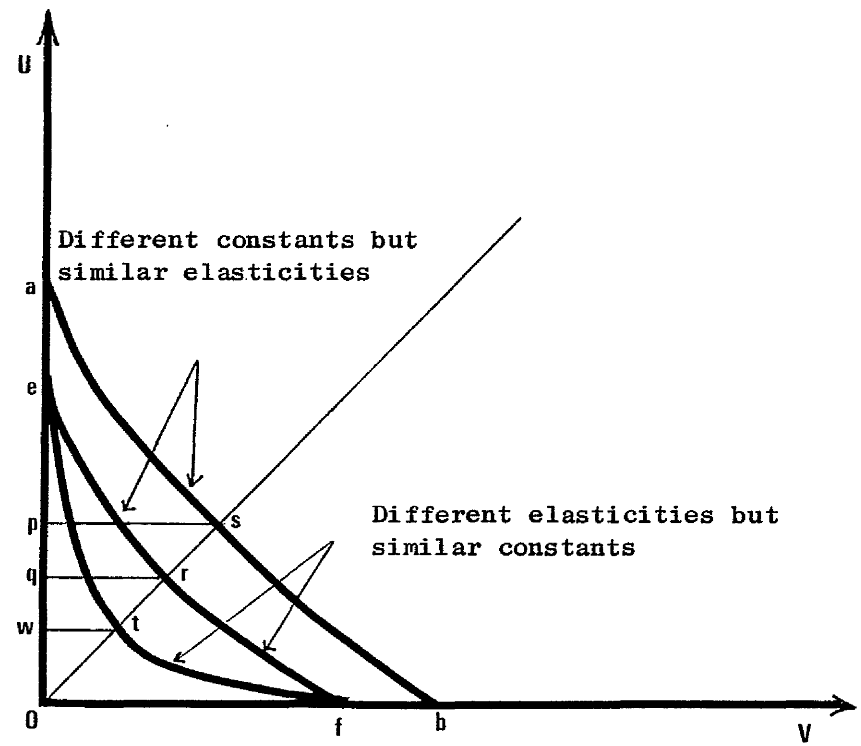
(10) Note that the three measures of efficiency (U*, A and B) will only produce similar rankings if A and B are correlated. Later considerations suggest that this may indeed be the case.

DIAGRAM 6.5 THE RELATIONSHIP BETWEEN THE UV CURVE AND ITS PRINCIPAL DETERMINANTS

(a) Derivation of the UV Curve



(b) UV Curve



reasonable and comprehensive comparisons between LIMs. Thirdly, it is also the case that A and B are not really as important as U* since the U* index measures the maximum amount of labour market imperfections whereas A and B only measure particular aspects of the changes in labour market imperfections. Finally, and related to the previous comment, it also has to be borne in mind that U* is a more powerful measure of LIM efficiency because it takes into account the influence that both A and B have on the positioning of the UV curve. That is, U* encompasses how soon imperfections appear on the market and how well the LIM copes with such imperfections.(11)

On the basis of the points raised so far it would seem that when testing hypotheses related to LIM efficiency that U* should be viewed as the key index of performance in that it unambiguously measures LIM efficiency by estimating the maximum amount of non-demand deficient unemployment in the market. Nonetheless, as a back-up it may be appropriate to quote values of A and B when examining particular aspects of LIM behaviour. Of these two secondary measures the B value will be the most important since this measure has been used by other studies (see for example, Cheshire, 1976) the result of which may be introduced in the empirical section for comparitive purposes. In addition to this, the B coefficient will probably be of more value since the constant is less likely to show significant variation in value between LIMs.(12)

---

(11) The validity of the B value as a measure of efficiency, depends in part on whether the level of demand is rising or falling in the LIM. More specifically, although it is reasonable to suggest that an efficient LIM is one where a small increase in vacancies will produce a proportionately large decrease in unemployment the corollary of this is less convincing. That is, it is difficult to accept that a LIM is efficient where a reduction in vacancies results in a relatively large increase in unemployment.

(12) For example, if the contstant term is insignificant in any regression equation run on $\log U = \log A + B \log V$ then the consant term in natural numbers will always equal 1.

2. THE DETERMINANTS OF LLM EFFICIENCY

Having outlined how LLM efficiency may be measured using the UV relationship it is now possible to show how dominance may affect the position of the UV curve and hence LLM performance. This exercise is the subject of the first part of this section. The second part of this exercise examines the way in which other LLM characteristics influence dominance so that it will be possible to effectively control for these when attempting to empirically isolate the impact of dominance. Following this the third and final part of the section concentrates specifically on dominated LLMs and tries to identify the principal determinants of variations in performance within this group by looking at the impact the degree of dominance and industrial sector may have on efficiency. Whenever appropriate in both sections an attempt is made to develop hypotheses which may subsequently be tested empirically[13].

2.1 The Impact of Dominance on LLM Performance

The preceding analysis suggested that the efficiency of a LLM may be measured by the point where the UV equation crosses the U=V line, by the rate of substitition between unemployment and vacancies, and the value of the log equation's constant term. The analysis also indicated that the values associated with all of these measures reflects the behaviour of the two components of non-demand deficient unemployment, structural unemployment (Us) and frictional unemployment (Uf).[14] Bearing this in mind, and extending the logic a stage further, the key objective here is to establish that dominance may affect Us and Uf and hence LLM performance.

---

(13) As will become evident in Chapter 7 and Appendix 15 the nature of the hypotheses which can be developed on the relationship between efficiency and LLM structure is constrained by both data and econometric problems. As a result it is only practical to derive broadly based propositions highlighting in general terms the impact of LLM characteristics on LLM performance.

(14) See Appendix 14 for details on the nature of both Us and Uf.

Looking initially at Us, which measures the mismatch between available jobs and the unemployed in the LLM, it can be argued that this component of the unemployment rate will be relatively low in a dominated LLM since there will be a relatively limited opportunity for vacancies to appear in the market for skills other than those employed by the dominant plant.[15] For example, in dominated LLMs exhibiting relatively high levels of unemployment it is unlikely that there will be high vacancy levels in other skill groups since there will be relatively few employers in the remainder of the LLM capable of creating such vacancies and consequently the associated threat of a mismatch. Extending this argument, if a job vacancy arises in a plant dominated LLM then it should be filled relatively quickly since the unemployed are more likely to be compatible with the skills associated with the job opportunity. This implies that if there are unemployed workers in the LLM it will tend to reflect a deficiency in demand rather than LLM imperfections. The net effect of these pressures will be that the UV curve in a monopsonistic LLM will tend to lie closer to the origin. Relating this to the earlier discussion suggests that dominance will delay the onset, through its impact on Us, of LLM imperfections and will also tend to minimise their impact once they appear.[16]

Frictional unemployment is determined by less quantifiable but nonetheless real influences which include imperfect labour market information and the lags associated with labour market adjustment. Following on from this definition it is also possible to show that frictional unemployment may be reduced in dominated LLMs through the influence monopsony has on worker job search patterns, where to a large extent such search behaviour often relies heavily on informal methods operating through family and kinship contacts and by on-spec

(15) Note that through the discussion it is assumed that the quasi-monopsonistic position of the dominant plants implies that these employers hire a high proportion of many of the skill groups within the LLM.

(16) Note that the level of structural unemployment in a LLM is a function of the size of the area. Therefore, in sufficiently small areas the problem of structural unemployment may be defined away. See, for example, Hughes (1974, pp24-25)

application by the searcher to local employers.(17) (18)
Given this model of job search it is reasonable to assume that the policies adopted by the dominant plant may help enhance the effective search for employment. In particular, because of the dominant plant's pre-eminance in the LLM most workers will be aware of the conditions of employment associated with working in such an establishment and the precedures associated with its selection process. As a result of this widespread availability of information on the dominant plant and the consequent reduction in uncertainty associated with the job search process frictional unemployment should be reduced in this type of LLM.(19) (20)

---

(17) For a summery of Worker Search behaviour and job search models under conditions of imperfect information see Lippman and McCall (1976). Note that is was not felt that any of these models could have realistically been incorporated into the efficiency model. This conclusion was reached largely for two separate reasons. Firstly, the models in the literature are generally very sophisticated and the resultant theoretical propositions cannot be tested within the confines of the available data set. Secondly, existing search models do not take account of the variables specifically under examination in the monopsony model, and it was beyond the scope of the study to develop a more comprehensive theory in what is already a difficult area. As a result of these considerations it was decided to concentrate on a far more simplistic but inherently more testable model.

(18) Search behaviour will be more formalised for white collar workers and therefore is less subject to the informal information network. Note also that the impact of monopsony on the distribution of wage offers will also affect white collar workers in the same way it affects manual groups.

(19) One qualification to this will be if the dominant plant does not recruit centrally. Under these circumstances knowledge of the dominant plant may become fragmented with adverse implications for the length of the job search process. However, it should be remembered that the earlier results of the questionnaire analysis suggests that this is not the case (see Chapter 5) and that recruitment is centrally located.

(20) Another related point is that workers employed by the dominant plant will not have to quit the plant to search for alternative employment within the establishment. The implication of this is that a considerable amount of potential search behaviour is internalised within a relatively high proportion of the LLMs total employment, and observed frictional unemployment may again be significantly reduced.

Complementing this tendency the importance of the dominant plant to the local economy may also lead to closer and more productive links with the Job Centre and other related LLM institutions. By applying logic similar to that outlined above this relationship should also help reduce frictional unemployment. The net impact of both these pressures should be that once again the onset of LLM imperfections, caused this time by frictional unemployment, will be delayed and subsequently minimised with the result that plant dominated UV curves should lie closer to the optimal path and the origin.

In addition to influencing the quality of information and the speed of information flows in the LLM dominance will also affect the quantity and variation of information in the LLM. More specifically dominated LLMs, as a direct result of their quasi-monopsonistic nature, will restrict the distribution of wage offers to be searched and this in turn will have implications for LLM performance. That is, a worker will generally search in the labour market until the expected marginal cost of further search and unemployment equals the expected marginal benefits of securing employment at a higher wage. In practical terms this process involves the worker sampling a number of vacancies in the LLM and from this assessing the LLM job environment, and more specifically to what extent an unsampled or future vacancy is likely to improve on existing offers. The time taken to make such an assessment, and hence the duration of unemployment will be influenced by plant dominance since a searcher sampling the dominant plant will immediately be able to estimate the probability of receiving a better offer without being involved in any significant further searching.(21) That is, as the dominant plant represents a relatively high proportion of LLM employment the likeliehood of finding an improved offer within the LLM is significantly reduced,

---

(21) This assumes that job seekers are limited in the number of vacancies or offers they can search in a given time period, and similarly that employers are limited in the extent to which they can pass on job information in one period. The model also assumes that the time taken to "search" a plant is independent of the size and that the number of contacts to whom employers pass on vacancy information during a period is limited and the same for all plants. All these assumptions are sufficiently realistic not to damage the applicability of the search model.

and workers will tend to select a job vacancy faster. Dominance, therefore, simplifies the distribution of wage offers within the LLM with the result that searchers will be in a position to effectively choose quickly between alternative job opportunities. As a result, the average duration of unemployment in dominated LLMs will be reduced and the efficiency of the LLM improved.(22) (23) This same result holds even if there are no job vacancies in the dominant plant. That is, by significantly reducing the need to search a significant proportion of the LLM job seekers can, by concentrating on the remaining opportunities, again assess the remaining available jobs in the market and quickly decide on a job offer which satisfies their acceptance criteria. Once again the net result is a reduction in Uf and a movement of the UV curve towards the origin.(24)

To some extent the results of the analysis of the personnel policy questionnaire (see Chapter 5) suggest that there may indeed be a relationship between the attitude and behaviour of the dominant plant and the overall performance of the LLM. At a general level the questionnaire evidence was consistent with the view that the dominant plant is heavily integrated into the LLM, and in many respects may dictate the overall behaviour of the market. More specifically the questionnaire evidence also highlighted individual practices which will also tend to increase the efficiency of the LLM and thereby further confirm the relationships suggested above.

---

(22) Since the dominant plant is normally considered to be one of the leading LLM employers (see Chapters 4 and 5) searchers "sampling" this establishment can usually conclude that they are unlikely to secure a better job offer. Indeed, because the dominant plant generally offers better conditions there may be a waiting list of applicants already in alternative employment. Under the circumstances when a worker changes job there need not be any intervening period of unemployment and LLM efficiency will be further improved.

(23) As before, this mechanism works by both delaying the appearance of LLM imperfections and subsequently minimising their impact.

(24) Rather more tentatively the role of the dominant plant as the focal point in the LLM may further reduce frictional unemployment if the area's communications become focussed on the plant and as a result mobility is improved in the area.

For example, the extent, variety, and sophistication of dominant plant recruitmentmethods suggests that job search will tend to be minimised in such LIMs thereby helping to increase the overall efficiency of the market. Indeed the evidence suggests that, depending on circumstances, many plant personnel departments actively search out workers rather than merely responding to worker search patterns. Finally, and again a general observation, it also appears that dominant plants have a detailed knowledge of the LIM environment and that their policies and actions are shaped bearing this in mind. Accordingly, dominant plants should be able to respond rapidly to changing labour market conditions and thereby again help minimise structural and frictional unemployment and LIM inefficiency.

2.2 The Impact of Other LIM Characteristics on LIM Performance

Besides dominance there are other LIM characteristics which influence labour market efficiency and these have to be taken into account if the impact of dominance is to be isolated from the other variables. Theoretical considerations suggest that these additional variables include industrial dominance, LIM size, and LIM self containment. The reasoning behind this view is presented below and draws on many of the processes mentioned above in the discussion relating plant dominance to LIM efficiency.

Industrial dominance is important to LIM efficiency since, like plant dominance, it also influences both the structural and frictional components of non-demand deficient unemployment. More specifically and directly analagous to the reasoning applied in the case of plant dominated LIMs, in industrially dominated local labour markets, Us will again be relatively low due to the limited development of industries with skill requirements not related to the area's leading sector. That is, there are unlikely to be many job opportunities in the LIM which are not compatible with the dominant industry's skill requirements. Consequently, the probability that recruitment will involve retraining will be reduced, and employers will more readily accept job applications. This will lead to a reduction in unemployment duration and, as before, an increase in the efficiency of the LIM as measured by the UV equation.

Frictional unemployment may also be reduced in industrially dominated LLMs due to the beneficial effects the LLM structure may have on information flows. In many respects the arguments relating to industrially dominated LLMs once again parallel the propositions developed to explain the factors influencing LLM efficiency in plant dominated LLMs. Firstly, the availability and general understanding of job information may be enhanced in an industrially dominated LLM since much of the information will tend to relate to the practices adopted by one particular sector. Therefore, relevant job information may well be relatively standard and easily interpreted by both employers and employees. Secondly, the distribution of wage offers may be reduced and simplified since once again a relatively high proportion of the job opportunities will have been generated by the dominating industry. Both these factors suggest that to assess LLM conditions and subsequently decide on an acceptable vacancy will involve job seekers in shorter search strategies. This, in turn, will tend to reduce the duration of unemployment and hence frictional unemployment. As a result, industrial dominance will also tend to enhance the efficiency of the LLM as measured by the position of the UV curve.[26] PTO

The size of the local labour market, as measured by the number of workers or the geographical area under consideration may also have an effect on LLM efficiency through its influence on Us and Uf. With respect to structural unemployment the larger the LLM the more likely it is to be industrially diversified and with the result that there will be a higher probability of a mismatch between unemployment and vacancies and consequently relatively high levels of Us. That is, in an industrially diversified LLM the economic situation facing different industries need not be the same and, whilst there may be vacancies in one sector, the characteristics of the unemployed may only match a quite different industry. The resultant mismatch between labour supply and demand will serve to reduce LLM efficiency.[25] Larger LLMs may also be relatively

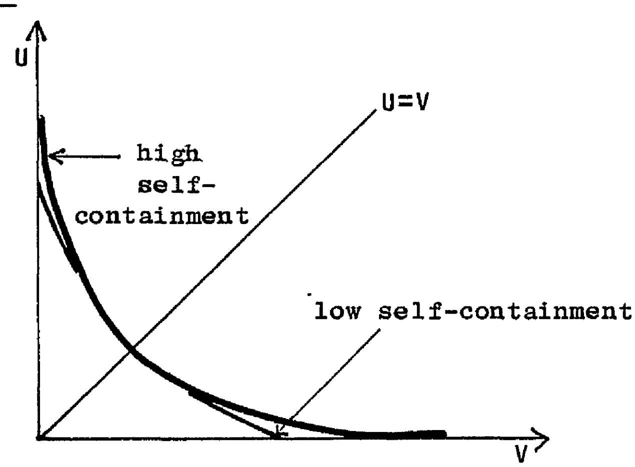
---

(25) Note that this argument is open to critisism in that it does not look at the effect of size considering all other things as equal. This is certainly a valid comment but it is equally correct to say that size and industrial diversity are not independent variables and it would be unrealistic to control for industrial diversities to look exclusively at size.

inefficient because of higher levels of frictional unemployment caused by the difficulties faced by workers searching for jobs in these markets. In particular the larger the market the smaller the proportion of vacancies which can be searched in a given period. Following from this, the smaller the proportion of total vacancies searched in a period the higher the probability that subsequent search will turn up a more suitable vacancy. As a result workers will extend their search period, the duration of unemployment will rise and so to will frictional unemployment.(26)

Geographical immobility is also likely to increase in larger LLMs reflecting the economic costs associated with travelling to work. The problem will arise even although LLMs were defined to minimise labour immobility since it is clear that some of the selected LLM configurations are large in relation to the typical journey-to-work patterns of many lower paid manual workers. If distance does inhibit some workers finding and taking on suitable employment will become more difficult and as a result frictional unemployment will again increase. The net outcome will be that the cost of travelling to work in larger LLMs will increase the level of unemployment associated with a given vacancy level and the UV curve will lie further from the origin. Once again, therefore, LLM size has a negative effect on LLM efficiency.

DIAGRAM 6.6 THE POSSIBLE IMPACT OF SELF-CONTAINMENT ON LLM EFFICIENCY



(26) Employers information will also be improved in an industrially dominated LLM in the same way and thereby help with the worker selection process which will also reduce unemployment duration.

The final characteristic of the LLM which may influence the behaviour of the UV equation is the level of self-containment experienced by the market. Although self-containment is unlikely to affect the level of unemployment associated with particular vacancy levels within the middle range of observed values, or indeed the sensitivity of changes in unemployment to changes in vacancies within the range, it may affect the behaviour of the relationship at extreme values and therefore the overall specification of the equation. In particular, highly self-contained areas will face special problems at very high or very low levels of unemployment. That is, in such markets workers can only leave the area to work outside by moving house, and similarly new workers coming in will also have to move house. Therefore, as the labour market tends towards very high or very low levels of unemployment, the substantial costs associated with residential mobility will inhibit the filling of vacancies at low unemployment, and the search for jobs at high unemployment.

The exceptional rise in unemployment or vacancy duration at the extremes will lead to higher overall vacancy levels at low unemployment, and relatively high unemployment levels when vacancies are low. This effect will appear in the UV equation as a more markedly non-linear relationship for more self-contained markets. In other words for a given value of U* the more self-contained LLM may have a higher constant and a more negative coefficient as Diagram 6.6 shows.(27)

2.3 Variations in Efficiency Within Plant and Industry Dominated LLMs: The Impact of the Degree of Dominance and Industrial Sector

Accepting the hypothesis that both plant and industry dominance enhances LLM performance through its beneficial impact on both structural and frictional unemployment, it appears reasonable to take the argument a stage further. That is, LLMs characterised

---

(27) Note that the diagram also points to other shortcomings in the unqualified use of U* or B as measures of LLM efficiency.

by relatively high levels of dominance may be more efficient than areas which only just fall into the project's definition of dominance. Whether this quite straight forward hypothesis can be sustained empirically is examined in the following Chapter.

The second and final aspect of behaviour associated exclusively with dominated LLMs and considered here, is the impact the dominating sector may have on LLM efficiency.(28) Within the plant and industry dominant group of LLMs there is a wide coverage of industries (see Appendices 7 and 8), and each of these sectors will tend to be influenced by a range of pressures and characteristics which may ultimately manifest themselves in differences in LLM performance.(29) However, developing any such model is beyond the scope of this research in view of the difficulties associated with incorporating the relevant variables into a reasonably coherent theoretical framework which at the same time is also capable of generating hypotheses capable of being empirically verified. Therefore, for these important practical reasons it was decided to concentrate on a more straightforward proposition linking the economic well-being of sectors to LLM performance. Following this approach it is possible to develop a reasonably simple model with easily tested predictions.

Looking initially at LLMs dominated by declining industries, it may well be the case that such areas are characterised by a relatively high level of vacancies given the unemployment rate. That is, although job opportunities may exist, they will tend to be in different industries with different skill requirements. As a result there will be a problem of a mismatch between the

---

(28) It should be noted that past attempts to examine industry based UV curves (see Thirwall, 1969; and Bowers etal, 1970) were not based on any previously developed theoretical propositions. Instead differences between regressions were merely reported and a few somewhat tentative conclusions drawn.

(29) For example, hiring practices, screening procedures, relationships with the Job Centre, the extent of unionisation and skill composition will all tend to vary between sectors and as a result will tend to affect worker and employee search procedures and hence frictional unemployment.

characteristics of the unemployed and the available job opportunities.(30) To some extent this pattern may be exacerbated by regional policy and the steering of new industries towards the more depressed areas. Since although in many cases this policy may create opportunites they may be of the wrong type.(31) (32) On the basis of these arguments the LIMs which should be most seriously affected by these pressures are those dominated by older industries where job losses have been particularly severe and government efforts to create alternative employment particularly vigourous. More specifically LIMs dominated by industries like textiles, coalmining and shipbuilding are probably the prime examples of LIMs where structural problems may adversely influence LIM efficiency.(33)

---

(30) It is worthwhile noting that this point does not conflict with the earlier conclusion that dominated LIMs will not exhibit high levels of structural unemployment. Rather, this action examines variations in the (limited) Us within the dominated group on the basis that this will differ between LIMs and will depend on the nature of the dominant sector.

(31) For example, in the Greenock LIM, which is an area dominated by shipbuilding and associated heavy industry, attempts to alleviate job loses in these sectors has resulted in the attraction of electronic companies into the area. The resultant skill mismatch has not, therefore, created the expected decline in unemployment.

(32) Reinforcing this hypothesis many of the declining industries have in the past been associated with relatively low wages and poor working conditions. Given these problems even though some of the unemployed may have been suitably qualified for a vacancy they will have been reluctant to work in such an environment. This form of "voluntary" unemployment may therefore compound structural problems in these areas.

(33) To some extent this hypothesis is supported in the empirical section through the positive correlation between unemployment and U*. That is, high unemployment areas tend to be associated with low levels of efficiency, which suggests these are structural problems in these LIMs.

At the other end of the economic scale LLMs dominated by expanding industries may also appear relatively inefficient since once again their presence may generate problems within the LLM. In a LLM where the industry is expanding there are likely to be a relatively high number of vacancies. Unfortunately, given that many of the expanding industries are relatively new and often have characteristic and rapidly evolving skill requirements, which may well be in short supply, the vacancies created by growth may not necessarily match the characteristics of the unemployed. Therefore, in these LLMs it is likely that there will be labour shortages (vacancies) in the expanding plants as well as a pool of labour trained and experienced in different skills (the unemployed). Consequently, LLMs characterised by new and expanding industries may also tend to have relatively low levels of efficiency as manifested by UV curves displaced relatively far from the origin. On the basis of employment expansion statistics growth sectors which may particularly face this problem are mechanical engineering, electrical engineering and chemical related industries. In addition to these, some LLMs dominated by manufacturers of consumer goods may also feel similar pressures.

Given that both rapidly expanding and declining industries may experience relatively low levels of efficiency, the group of dominated LLMs most likely to perform well would seem to be those associated with relatively stable sectors. In such LLMs vacancies created within the area are likely to match the characteristics of the unemployed and it is less likely that there will be sudden shifts in either variable. Again being more specific in relation to available data the higher levels of efficiency will probably apply to industries like vehicle manufacture and food and drink.[34]

---

(34) Concentrating exclusively on plant dominated LLMs there is also an argument to suggest that ownership characteristics may influence LLM efficiency. However, although such pressures may operate, they will probably only have a marginal impact on performance. Indeed, differences in LLM efficiency between ownership groups are more likely to reflect the impact of industry. As a result, it was decided not to examine this issue either here or in the empirical section.

CHAPTER 7

AN EMPIRICAL INVESTIGATION INTO THE RELATIONSHIP BETWEEN DOMINANCE AND LOCAL LABOUR MARKET EFFICIENCY

The objective of this chapter is to test the previously developed hypotheses on how LLM dominance influences the behaviour of the LLM in terms of the relationship between local unemployment and vacancy rates. Up until now little systematic research has been completed on this topic, either at this disaggregated level or in testing hypotheses which relate particular LLM characteristics specifically to LLM performance and efficiency. This reflects both an absence of an adequate theoretical framework covering such aspects of LLM behaviour, and the availability of a comprehensive data base on which to test the propositions. Both these shortcomings are to some extent overcome in this work. (1)

This chapter begins by examining the data and econometric issues relating to the UV analysis and sets out the most appropriate approach to the problem bearing in mind the resources available to the study. Having resolved the statistical problems the next two sections of the chapter tests the hypotheses relating dominance to LLM performance. In particular, this involves relating the values of U*, and B to the characteristics of the LLM. Of the two measures of efficiency special emphasis is placed on the U* index, since previous discussion suggests that this is the most important and meaningful measure of efficiency.

---

(1) Hyman and Palmer (1980) have recognised the absence of disaggregated UV analysis as a gap in the literature and have begun to tackle the problem. However, as yet no results seem to have been produced by this initiative.

1 PRELIMINARY REMARKS AND ANALYTICAL APPROACH

In order to accurately test the hypotheses relating dominance to LIM efficiency it is important to consider in some detail how best to generate and subsequently analyse the LIM based UV data set. Most aspects of this problem are investigated in some depth in Appendix 13 and Appendix 15. Therefore, only a summary of the key results of this analysis are presented in this discussion in order to provide a suitably comprehensive overview of the wide range of problems involved with the analysis, and as a means of helping to identify how best the obvious constraints on the analysis can be overcome.

In this short review the data problems are discussed first, highlighting where possible how particular biases in the data set may mask any relationship between dominance and LIM efficiency. The principal econometric issues are then examined with the objective of trying to identify the most appropriate statistical format for the analysis. Following this the underlying properties of the UV equation generated by following the recommended econometric approach are examined and the implications the results have for testing the hypothesis relating to dominance are reviewed. Drawing on many of the previously developed conclusions, the section ends with a more detailed investigation of how best to build effective controls into the UV analysis so that problems of colinearity can be avoided when investigating the relationship between dominance and efficiency.

1.1 The Data Set

Testing the hypotheses relating to LIM efficiency involved gathering data on both registered unemployment and vacancies at an appropriately disaggregated level. In addition data on the number of LIM employees was also collected so that the rate of unemployment and vacancies could be calculated and as a result direct comparisions of performance and behaviour could be made between LIMs. For statistical resons the data collected, with some minor exceptions, was restricted to adult males since these figures are less susceptible to pressures exerted by seasonal or cyclical fluctuations.

To ensure that each UV curve was estimated acurately it was decided to collect 100 quarterly unemployment and vacancy observations for each LLM covering the period 1951-1975. Unfortunately, it was not possible to collect similar data on employment since only annual estimates are available. Consequently, and as a proxy, it was decided to collect 25 yearly figures over the same time-period and use this data to estimate the unemployment and vacancy rates for the 100 observations. The data on unemployment, vacancies and employees was collected from the Department of Employment's ten regional offices. In most cases the records kept by the Department were fairly comprehensive with only fairly minor interruptions in the time-series. Nonetheless, in some cases the data deficiencies were more severe and this was particularly evident in Scotland, Northern Region, and East Anglia where there were large gaps in the early data on employees and the unemployed. Apart from the data deficiencies common to complete regions there were also deficiencies in a few LLMs in regions where the data was otherwise relatively complete. Despite these intermittent problems of missing data in general there were still more than sufficient observations to calculate UV equations for most of the identified LLMs. However, when making comparisions between areas it should be remembered that the time-series involved may not match exactly.

Although it is generally possible to gather a sufficient quantity of data on unemployment, vacancies and employees to accurately estimate the UV equation for each LLM it is important to recognise the possible shortcomings associated with official data. In particular, it is important to realise that apparent differences in LLM behaviour may be caused by statistical biases rather than economic forces or even measurement errors. In the following brief discussion the possible data deficiencies are examined for each component of the data set (see Appendix 13 for a more detailed review of the problems). Following this, ways of overcoming these problems are considered so that the danger of statistical deficiencies conditioning the empirical analysis are reduced.

The Unemployment Series. This component of the data-base provides perhaps the most reliable statistics in that the figures are subject to only relatively minor shortcomings. Nonetheless, where analysing unemployment figures the following problems may influence the results:

- unemployment registration may fall below 100%

- the treatment of the temporarily stopped will be highly sensitive to the patterns of short term working in a particular area and the day in which the unemployment count is taken. This will influence the unemployment rate in a LLM.

- the use of the temporarily stopped mechanism may vary between areas and industries and therefore will differentially influence the unemployment rate across LLMs.

The Vacancy Series. Although the problems presented by the unemployment data are limited both in number and severity the same may not be true for the vacancy series. In this case the data has to be handled with extreme caution if statistical imperfections and biases are to be successfully isolated from substantive economic pressures. A detailed examination of the problems associated with the vacancy statistics is given in Appendix 13 but in summary form they are as follows:

- in general the statement ratio falls well below unity.

- the vacancy statement ratio varies with the demand for labour in a manner which is difficult to predict.

- the propensity to register vacancies may be influenced by particular characteristics of the LLM, of which the most problematic is the presence of plant dominance.

- there may be differences between industries in the propensity to register vacancies.

The Employee Series. This series also has its problems, although for the most part these relate to data availability and compatability rather than the more complex and subtle shortcomings associated with the unemployment and vacancy series. The principal problems are as follows:

- the conversion of annual figures into quarterly estimates introduces a source of measurement error into the estimation of the UV curve.

- employee data for 1974 and 1975 was missing.
- in some LLM areas the employee figures were subject to significant jumps which will disturb the UV function.

- the method of collecting employee data changed between 1971 and 1972 causing a slight discontinuity in the series.

- the employee estimates refer to the number of men working in an area, whereas the unemployment series relates to men living in a particular employment office area. As a result the estimated unemployment rate may be biased dpending on whether the LLM is a dormitory town or a job centre.

Considering all the data problems together there are obviously a wide range of imperfections in the statistics which, if ignored, would seriously threaten to underpin any conclusions drawn from the empirical analysis. Nonetheless, there are several ways in which the impact of these data problems can be minimised without too much difficulty. In the first place some of the shortcomings can be dismissed as marginal and therefore of little consequence when estimating the LLM UV curves. Secondly, where there are serious gaps in the data set or particular LLMs are subject to unexplicable shifts these areas can simply be dropped from the analysis since the number of areas involved are unlikely to influence the results of the study. Thirdly, it is possible to introduce specific controls into the analysis to overcome pre-identified problems. In particular, since many of the data problems seem to be related to demand , controlling for unemployment when analysing the results should help overcome many of the dangers associated with the data.

Analysing the data on a regional basis will also achieve a similar effect whilst also helping to standardise for any problems which appear to be specifically regional rather than demand based.

Although it should be possible to identify most of the shortcomings associated with the data set and consequently suggest effective ways of controlling for these problems it should be recognised that it will only be necessary to introduce controls if dominance is correlated with any of these potentially disruptive influences. That is, if dominated LLMs are not associated with any particular region or unemployment grouping then there is little danger that the results of the UV equation will be biased. The extent to which this is true and a more detailed discussion on the nature of any required controls is presented below in Section 1.4. As a final point it should be clearly understood that no matter the sophistication of the adopted controls it is unlikely that all the shortcomings associated with the data can be overcome and as a result the conclusions drawn on the basis of the empirical results must always be subject to qualification.(2)

1.2 The Appropriate Econometric Approach

Although the hypotheses under test are relatively straightforward it is important to recognise the statistical and econometric constraints facing the study. Failure to explicitly recognise these and as a result select the most appropriate statistical techniques would almost certainly generate potentially misleading conclusions based on the misinterpretation of the available data. Given the data-set under examination, and remembering the hypotheses under test, the most econometrically correct and elegant method of analyses would be to use generalised least squares (see Appendix 15). Unfortunately, however, it was not really practicable to use this approach since the UV data was not organised in a form suited to this technique. Reinforcing this pattern to implement the generalised least squares effectively would have required supplementing the existing computer software package with a specialised program, and this was well beyond

(2) For example, if dominance affects the propensity to register vacancies then it will not be possible to control for this in the analysis.

the scope of the research. A further disadvantage associated with the generalised least squares is that this method was not adopted by any related studies and therefore to follow this route would pre-empt comparisons between the LIM-based UV results and other similar work.

Bearing in mind the severe problems associated with adopting the generalised least squares the most practicable method of testing the hypotheses then becomes to run the standard UV equations on a LIM basis. More precisely this involves estimating the equation $\log U = \log A + \beta \log V$ for each individual LIM. Having lifted or calculated the B and U* values from each equation it is then possible to relate the variations in the two interrelated measures of efficiency to the characteristics of the LIM.

Although this approach appears to be relatively straightforward it is subject to several important econometric shortcomings which have to be taken into account if the results are not to be misinterpreted. One important failing is that if the estimated B cofficient can be explained in terms of other variables, for example dominance, which ideally should somehow have been included in the equation then the resultant Bs are biased estimates and conclusions based on these figures may be misleading. Another and related problem with such an equation is that it will be impossible to distinguish between the variation in the Bs caused by the structural characteristics of the LIM and the random (white noise) variation associated with estimating the coefficient. Finally, but of fundamental importance, since the B and U* measures are estimates it is theoretically not valid to apply statistical tests to separate categories or sub-group averages in an attempt to identify significant differences between them. However, in the subsequent empirical analysis t-test results are quoted in order to at least give some impression of the significance of the reported differences between key groups.

As a result of all these considerations the analysis of the UV data, and the conclusions derived from it, have to be restricted to only suggesting what the results may imply rather than deriving the more positive conclusions which would have been possible under ideal conditions. Nonetheless, it remains possible to overcome some of the statistical problems inherent in the data by testing the dominance hypotheses whilst controlling for other potential influences on LLM efficiency. Adopting this approach makes it possible to remove some of the background variation in the efficiency measures and therefore identify more accurately any systematic relationship between dominance and efficiency. On the basis of previous studies two variables which immediately suggest themselves as controls are the unemployment rate and region. Controlling for these two factors in the empirical analysis will not be difficult, and indeed the possible need to build this into the investigation has already been highlighted in the discussion on the data-set.

1.3. The UV Equation Results : General Observation and Implications for Analysis.

Accepting that the most appropriate way of analysing the UV data is as outlined in the previous section this discussion summarises the underlying characteristics of the resultant regressions and outlines the implications these have for the hypotheses being tested. In particular, the section examines how well the $U = AV^B$ model explains LLM behaviour given that it is a relatively simple formulation of a highly complex environment. The results presented here are once again taken from Appendix 15 where the topic is dealt with in detail.

One of the first results in Appendix 15 confirms the suspicion expressed above that in many cases the standard UV equation falls short of a precise statement of UV behaviour. Indeed, there is such a variation in the UV equation results it was decided to establish a set of criteria to help identify which UV equations best match their predicted theoretical specification ($U = AV^B$) whilst remaining econometrically well-behaved. Bearing in mind the specification of the equation and the nature of the problem being examined the following were considered appropriate.

- the estimated equation should have an acceptable Durbin-Watson statistic confirming that any autocorrelation has been satisfactorily corrected.

- the reported R^2 should exceed 0.75 thereby indicating that the UV equation explains a relatively high proportion of the variation in unemployment through the constant term and the variation in vacancies.

- the B coefficient should be statistically significant, as this is the only independent variable in the equation.

- the constant term should be statistically significant.

Applying these qualifying conditions to each of the LLM UV regressions Appendix 15 shows that; in 70% of the LLM regressions the value of R^2 was above 75%, in 78% of the LLMs the B coefficient was significant; in 55% of the sample the constant was significant; and in over 98% of the cases the Durbin-Watson statistic fell within acceptable bounds. Unfortunately, in many cases the regression shortcomings were not all concentrated in particular LLMs with the result that of the 289 regression equations estimated only 73 satisfied all of the qualifying conditions. In addition to this a further 20 LLMs had to be dropped because of serious data problems. Overall, therefore, only 53 LLMs could strictly be classified as well-behaved.

Although it is possible to relate the causes of the regression equations shortcomings to particular characteristics of the LLM, this does not overcome the fundamental problem that such a high proportion of LLM UV regressions failed to meet all the qualifying conditions thereby potentially limiting the extent and sophistication of the empirical analysis. As a result it was decided to investigate ways of retaining as many LLMs as possible in the sample, despite the apparent econometric shortcomings associated with many of the equations. Conveniently there are several reasons to theoretically and statistically justify this course of action.

In particular, it appears that there are few statistically significant differences between the characteristics of the total group of UV equations and the well-behaved sub-sample. Related to this it is also the case that there are no significant differences between the accepted and rejected LIMs on the basis of the measures of LIM efficiency used in the study. Taking both these factors into account, it is unlikely that by using the complete sample as a statistical base the results of any subsequent investigation will differ markedly from those produced by analysing the good-fit LIMs. A further argument in favour of extending the sample size is that the process of selecting well-behaved LIM appears to be biased in that it is related to dominance. Finally, it should also be remembered that many of the suggested selection criteria were subjectively derived and hence are not totally reliable.(3)

Bearing in mind the arguments both for and against restricting the number of LIMs to be analysed it is difficult to unambiguously establish the most appropriate approach. Inevitably there has to be some trade-off between sample size, the performance of the UV equation, and any potential bias created by excluding a proportion of the estimated equations. As a compromise, therefore, it is perhaps most appropriate to analyse the equations at different levels determined by to what extent they meet the predetermined econometric performance measures. More specifically it would be advisable to examine the UV equation results in parallel within the following hierarchy of sample sizes;

---

(3) For example, in the case of LIMs with an insignificant constant or B term there is an argument for leaving them in the sample because although the estimates may be insignificant they remain the "best" available estimates.

- the total sample excluding LLMs where there have either been serious boundary changes or employment shifts, where an unacceptable level of autocorrelation persists, and where there are highly anomalous U* values.

- Level one above but also excluding LLMs where B is insignificant.

- Level two above but also excluding LLMs where A is insignificant, and finally

- Good Fit LLMs as originally defined.

Differences between the four groups not explicable in terms of a bias in the selection procedure may then be attributed to the econometric and other difficulties associated with the analysis. For the practical purposes of recording the results of the research and deriving conclusions based on these it should be sufficient to record in the main body of the text only the results relating to the level one group. Only in cases where there are differences between the total and the smaller sub-sample need any other results be included. However, a complete set of tables covering all the other sub-groups is presented for reference in Appendix 16.

1.4 The Relationship Between Dominance and Other Variables: the Need to Introduce Appropriate Controls.

The discussion on the data and econometric problems associated with LLM based UV statistics suggested that there may be a need to control for particular variables in order to isolate the impact dominance has on labour market efficiency. This section examines this issue in more detail and having identified potentially important controls suggests how best they can be introduced when testing the hypotheses developed in Chapter 6. In selecting appropriate controls to help analyse the impact of dominance on LLM behaviour this section also effectively tests whether there is a relationship between LLM efficiency and other labour market characteristics. Adopting this approach then makes it possible to concentrate exclusively on the relationship between dominance and labour market performance in the following section. Although the discussion on effective controls is fairly comprehensive it should be remembered that it is only practically possible to identify first-order relationships between dominance and other LLM variables. As a result it is possible that the need to introduce more complex and subtle controls are overlooked in the analysis.

When analysing the need to introduce controls the principal factor that has to be established is whether dominance is related to any of the other characteristics associated with the local labour market which may also affect its efficiency.(4) Whether any such relationships exist is examined in Table 7.1 for each of the four sub-sample groupings identified in the previous section. In general terms Table 7.1 suggests that there appears to be only a limited relationship between dominance and other LLM characteristics. However, where there is a relationship it appears to be slightly more pronounced in the larger sample sizes. That is, for the particularly limited good-fit sub-sample there are no significant relationships between dominance and any other feature of the LLM. The changing pattern of significance between sub-samples probably only reflects the impact of the reduced number of observations in sample size as the selection criteria are tightened, although to some extent it may also point to some form of bias related to the sub-sample selection criteria. Bearing in mind the results of Table 7.1 the following analysis discusses in more detail the nature of the important correlations between variables.

---

(4) Note that to overcome some of the econometric problems identified in Appendix 15 there will be a need to group together similar types of LLM and hence some form of control will be introduced automatically.

TABLE 7.1 THE RELATIONSHIP BETWEEN DOMINANCE AND OTHER LIM CHARACTERISTICS

LIM Characteristic	Extent of Relationship with Dominance			
	Total Sample	Sample where B significant	Sample where B and A significant	Good fit LIMs
Unemployment Rate	99	99	90	NS
Region	90	90	NS	99
1971 Population	99	NS	NS	NS
Acreage	NS	NS	NS	NS
Self Containment	NS	NS	NS	NS
No of Observations	NS	NS	NS	NS

NOTE: (i) Significance is measured in terms of the confidence interval produced by running either a CHI SQ or F test.

(ii) NS stands for not significant and applies to confidence interval measures falling below 90%.

TABLE 7.2 AVERAGE UNEMPLOYMENT BY DOMINANCE GROUP

Nature of Dominance	Average Unemployment Rate
Plant Dominance	2.8
Industry Dominance	1.9
Non Dominated	3.4
Total	3.0

Note: (i) Differences between all groups significant of 95% confidence level.

One of the strongest relationships identified in the table is that between dominance and unemployment. For the complete sample this relationship is summarised in Table 7.2 which shows that industrially dominated LLMs have the lowest unemployment rate (1.9%), plant dominated the second lowest (2.8%) and non-dominated the highest (3.4%). These differences are significant at a 95% confidence level. On the basis of these results it would appear that controlling for variations in unemployment may be an important element in isolating the impact of dominance on the grounds that unemployment itself may influence efficiency. The argument that unemployment influences LLM efficiency need not depend on a direct theoretical connection between the two variables but rather on the influence the unemployment rate has on the UV data and hence ultimately on the LLM performance measures. In particular, and as Appendix 13 illustrates the propensity for employers to register vacancies and employees to register as unemployed varies with LLM demand and therefore unemployment. Similarly, the problem of the temporarily stopped also varies with unemployment levels. Both these considerations will influence the observed levels of LLM efficiency and so mask any impact dominance may have on LLM behaviour.

The problem of controlling for unemployment is, however, more complex than mentioned above in that according to the hypotheses developed in the previous chapter dominance may influence both U* and B and consequently unemployment. That is, the line of causation may run from U* and B to unemployment and not the reverse. Under these circumstances by controlling for variations in unemployment any real effect of dominance on LLM efficiency may be artificially removed. Unfortunately, without more detailed evidence on the likely impact of unemployment levels on efficiency it is difficult to resolve this problem satisfactorily. As a result it is probably advisable to initially analyse the LLM data without controlling for unemployment but subsequently introduce a control in case the variable exerts an independent effect on LLM efficiency.(5)

Accepting the need to standardise for unemployment at some stage of the analysis only leaves the problem of how to effectively implement the control procedure. For practical purposes it was decided to merely draw a distinction between high and low unemployment areas, where high unemployment LLMs were arbitrarily defined as those with an average unemployment rate greater than 3%. Although the distinction is limited it can be defended since it retains a sufficient number of observations in each category to allow meaningful conclusions to be drawn.(6) In addition, it should be remembered that the underlying reason for adopting the control is to identify, at a relatively general level, whether unemployment influences efficiency rather than to examine the impact of unemployment in detail.

Table 7.1 also identified a relationship between dominance and region, and this is more precisely quantified in Table 7.3. Although the pattern is by no means clear-cut it appears from a more detailed examination of the data that some regions are less inclined than others to be plant dominated. For example, whilst Scotland, Wales, Northern Region and Yorkshire-Humberside are characterised by a high proportion of dominated LLMs, in the West Midlands, East Anglia and the South East there are relatively few such areas. To a certain extent this reflects the underlying industrial structure of particular regions although it is also, in part, attributable to the tendency for smaller LLMs to be concentrated in certain regions.(7) The pattern for industrially dominated LLMs is less clear, although again there appears to be a similar relationship between the regions, albeit more tentative.

---

(5) Controlling for unemployment will also overcome the problems identified by Evans (1977) and others who argued that the UV curve will differ depending on whether it lies above or below U*.

(6) See below for a supplementary method of controlling for unemployment.

(7) Note, however, that there probably is a link between industrial structure and LLM size.

The observed relationship between region and dominance is again a problem since regional considerations appear to influence the level of unemployment and vacancy registration, and the use of temporarily stopping employment. Such trends will influence the measures of efficiency. Therefore, when analysing the true impact of dominance on LLM behaviour it is important to control for region. Unfortunately, it is not possible to control for region simply by examining separately each of the 10 geographical areas identified in the study since in many cases there will be an insufficient number of observations to draw any meaningful conclusions. This constraint is, of course, compounded by the concentration of particular categories of LLM in certain regions. To overcome this problem it was decided to aggregate the regions into three larger groups made up, where possible, of contiguous areas but primarily based on the level of unemployment prevailing in a particular region (see Table 7.4).(8)

Distinguishing between regional groupings on the basis of unemployment rates effectively recognises that the biases generated by regional elements are for the most part probably caused by differences in demand between the different areas. As a result, therefore, controlling for regions in the analysis is essentially another method of standardising for demand and hence unemployment levels.(9) (10)

---

(8) Note that this procedure still does not completely overcome the problem of limited numbers of observations in each category.

(9) Note that if there is in fact a particular regional effect this is unlikely to be lost since for a large part the regional groupings are contiguous. Note also that an alternative way of controlling for dominance would be to group together regions depending on whether they contained a high or low proportion of dominated LLMs. Conveniently, this is largely what happens with the adopted demand-based approach and therefore this classification serves both purposes.

(10) Note that controlling for unemployment indirectly by region has its limitations since the data shows that although indutry dominated and plant dominated LLMs are concentrated in high unemployment regions they themselves have relatively low unemployment rates. Consequently, it appears that plant dominated and industry dominated LLMs perform even better in terms of unemployment when standardising for region. Whether this reflects industrial characteristics or is, in part, confirmation of the hypothesis that efficiency is related to dominance will be investigated in the following section.

TABLE 7.4 THE AVERAGE UNEMPLOYMENT RATE BY REGION

Region	Average Unemployment	Classification of Unemployment
Scotland	5.1	high
Wales	4.6	high
North	5.5	high
N West	2.4	average
Yorks Humberside	2.5	average
W. Midlands	1.8	low
E. Midlands	1.6	low
E. Anglia	2.7	average
S. East	2.2	low
S. West	2.9	average

TABLE 7.5 THE RELATIONSHIP BETWEEN DOMINANCE AND LIM SIZE

Nature of Dominance	LIM Population (1971)	LIM Acreage
Plant Dominated	54	15
Industry Dominated	65	11
Non-Dominated	102	14
Total	83	14

Note: (i) Population and acreage figure are in thousands.

Bearing these considerations in mind the first grouping covers the low unemployment regions and incorporates the West Midlands, the East Midlands and the South East. The second group, characterised by regions of average unemployment, includes the North West, Yorkshire-Humberside, East Anglia, and the South West. The final grouping covers regions suffering from relatively high unemployment, and these are Scotland, Wales and Northern England.

Returning to table 7.1 there also appears to be a limited relationship between dominance and LLM population. This relationship is presented in more detail in Table 7.5 and the observed results are as intuitively would be expected with plant dominated LLMs concentrated in the smallest LLMs, industry dominated LLMs in medium sized areas, and non-dominated LLMs mostly in the largest areas. On the basis of this limited relationship between LLM size and dominance there is an argument to suggest that LLM size should be controlled for when investigating the relationship between dominance and efficiency. This is particularly important since theoretically (see Chapter 6) the predicted impact of LLM size on efficiency is closely correlated with the hypotheses relating domina to LLM performance. Without controlling for size, therefore, there would be a problem of colinearity.

Colinearity only poses a problem, however, if indeed there is a relationship between LLM size and LLM efficiency as measured by U* and B. In order to establish whether there is any evidence for this Table 7.6 summarises the relationship between size and LLM efficiency.(11) From the figures there does not seem to be any

(11) Note that no controls were built into the test. That is, it is not run on a standardised basis and therefore the results shown in Table 7.6 may be an oversimplification. However, apart from dominance it is unlikely that LLM size will be correlated with other variables which may also influence dominance. To check that dominance did not play an indirect role the data was analysed controlling for dominance and as anticipated the results did not differ from the pattern shown in Table 7.6.

TABLE 7.6 THE RELATIONSHIP BETWEEN LIM POPULATION AND LIM EFFICIENCY

LIM Population (000s)	U*	B coefficient	No of Observations
Less than 20	2.34	-0.24(0.17)	62
20-40	2.71	-0.25(0.16)	48
40-60	2.77	-0.22(0.17)	37
60-80	2.35	-0.26(0.16)	20
80-100	2.54	-0.27(0.21)	13
100-120	2.73	-0.32(0.24)	8
120-140	2.24	-0.21(0.13)	7
140-160	2.27	-0.42(0.12)	4
160-180	4.16	-0.18(0.33)	4
180-200	2.32	-0.26(0.31)	2
Above 200	3.75	-0.31(0.24)	13
Total	2.63	-0.25	218

TABLE 7.7 VARIATIONS IN B AND LOG A BY HIGH AND LOW SELF-CONTAINMENT CONTROLLING FOR U*

U* Value	Log A		B		No of Observations		Total
	Low SC	High SC	Low SC	High SC	Low SC	High SC	
0-2	0.4	0.5	-0.34	-0.33	90	17	107
2-4	1.2	1.1	-0.23	-0.21	58	16	74
4-6	1.7	1.6	-0.10	-0.76	17	7	24
6-8	2.0	1.8	-0.05	-0.08	8	3	11
8-10	2.3	-	-0.04	-	3	-	3
above 10	-	2.3	-	-0.03	-	1	1

Note: (i) SC represents self containment systematic variation between LIM efficiency and LIM size although there is considerable variation between categories. Consequently, on this evidence there appears to be little support for the hypothesis that LIM size influences efficiency. As a result, it will not be necessary to control for LIM size when investigating the relationship between dominance and efficiency.(12)

Again from table 7.1 there appears to be no relationship between dominance and LIM self-containment, and on this basis there is no need to control for self-containment levels when investigating the impact of dominance. Nonetheless, since it was hypothesised that there may be a relationship between self-containment and the characteristics of the UV equation (see Chapter 6) this should be further investigated before concentrating on the impact dominance may have on LIM efficiency. More specifically it was suggested in Chapter 6 that high self-containment LIMs will, other things being equal, be characterised by a more markedly non-linear UV relationship. That is, for LIMs with similar U* values the high self containment LIMs will have higher values of log A and more negative B coefficiants (see Diagram 6.6, Chapter 6). The results presented in Table 7.7, however, do not support this hypothesis. The table shows that holding the value of U* relatively stable does not generally produce a higher value of log A in the high self containment LIMs. Similarly the value of B associated with each U* band is not more negative in the highly by self-contained LIMs.

---

(12) LIM acreage was also used as a measure of LIM size. In this case there again was no significant relationship with dominance, and similarly there was no apparent relationship between acreage and LIM efficiency. This may in part explain why there is no relationship between population and efficiency in that all LIMs fall within the same LIM size category and as such actual population levels, or population densities, are not as important as space in terms of information networks which has been viewed as a key determinant of efficiency.

The only remaining variable in Table 7.1 to be discussed is the number of UV observations associated with dominated groups. This characteristic was included in the analysis in case there were significant differences in the number of observations between dominance categories, or that certain LLMs were restricted to specific time-periods. Under such circumstances there would have been a danger that the UV equation could have been influenced by data availability. The figures, however, show that there are no significant differences between the groups, and therefore it is extemely unlikely that this will affect the position of the UV curve. As a result there will be no need to control for the number of observations in the analysis.

Although not mentioned so far there is a further variable, industrial sector, which should be taken into account when analysing the impact of dominance on LLM efficiency.(13) Although this is investigated in detail in the following section when variations within plant and industry dominated LLMs are considered, there is sufficient evidence from previous studies (see Bowers et.al, 1970; and Thirlwall, 1969) to suggest that industry influences efficiency. If this is correct and dominated LLMs tend to be disproportionately represented by specific industries, then an observed relationship between dominance and LLM efficiency may only be a manifestation of the true relationship running between industry and LLM efficiency. To avoid making this particular mistake will involve excluding industries from the analysis which are disproportionately represented in either the industry or plant dominated samples and where it is considered that these exhibit characteristics differentiating them from other LLMs. In practical terms this exercise is relatively straightforward since by examining the industrial structure of plant and industry dominated LLMs (see Appendix 3) it appears that only LLMs dominated by coal and steel fall into this category. That is, these industries are concentrated

(13) Industry type was not included in Table 7.1 because, by definition, it was not possible to classify the non-dominated LLMs by industry.

almost exclusively in plant dominated LLMs and they are also in some important respects different from other industrial sectors.[14] On this basis, therefore, it may be advisable at some stage to control for industrial structure by excluding LLMs dominated by steel plants and coal mines.

In conclusion, from the preceding discussion there are substantive arguments to support analysing the UV regression results in aggregate and subsequently controlling for unemployment, region and industry. Conversely, on the available evidence there appears to be little need to control for the impact of LLM size, as measured by population and acreage, or LLM self-containment since there is no obvious relationship between these two variables and dominance. Moreover, although theoretical consideration suggest that self containment levels and the LLM population may influence LLM efficiency this is not borne out by the analysis of the available data. On this basis it is not possible to support the hypotheses relating these two variables to LLM performance.

2 THE IMPACT OF DOMINANCE ON LLM EFFICIENCY

This section specifically tests the proposition that dominance influences the position of the UV curve, and therefore LLM efficiency, through its impact on structural unemployment and through its effect on LLM wage dispersion, LLM job search patterns and hence, ultimately, on frictional unemployment. That is, the net result of these pressures should be an inward movement of the UV curve in dominated LLMs. Unfortunately, it is not possible to predict whether plant or industry dominated LLMs will be the most efficient. Nonetheless both should perform better than otherwise similar non-dominated LLMs.

---

(14) In particular, both the coal and steel industries are in long-term decline and are nationalised. In addition coal mining is not a manufacturing industry.

In terms of the structure of this section the results of the analysis into UV efficiency are initially examined at a general level and then in more detail by systematically controlling for other variables which are related to dominance and may also influence LIM efficiency. The figures presented are only suggestive since econometric considerations and the nature of the data base prohibit any rigorous testing of the hypotheses under examination. In the text the reported figures only relate to the complete sample of LIMs, however, where major differences exist between this group and the more tightly specified but smaller sub-samples these results are also referred to.

Table 7.8 shows the overall relationship between dominance and the two measures of efficiency U* and B. The results for U* show that the efficiency of industrially dominated LIMs is much higher than either plant or non-dominated LIMs. With a U* value of 1.58% the industrially dominated LIMs are approximately 70% more efficient that the other two groups, and this difference is significant at the 99% level of confidence.(15) Although there is a small difference between plant dominated and non dominated LIMs in the predicted direction it is not significant. The results for the elasticity measure very much follow the same pattern with the only significant differences being between the industry dominated LIMs and the other two groups. In terms of the original hypothesis, therefore, it appears that the evidence in Table 7.8 only in part supports the general proposition that dominated LIMs will be more efficient than non-dominated areas.

Table 7.9 summarises in more detail the nature of the UV curve for each category of LIM by introducing the value of the constant and the average level of unemployment into the analysis. From these figures it is possible to illustrate diagramatically (see Diagram 7.1 and Diagram 7.2) the nature of each UV equation on the basis of both the standard UV diagram and the demand based model used to derive the UV curve. From these figures, and particularly Diagram 7.2, it is possible to show that in industrially dominated LIMs

---

(15) Note that although t-tests were run they are not strictly valid in view of the points raised in the previous section.

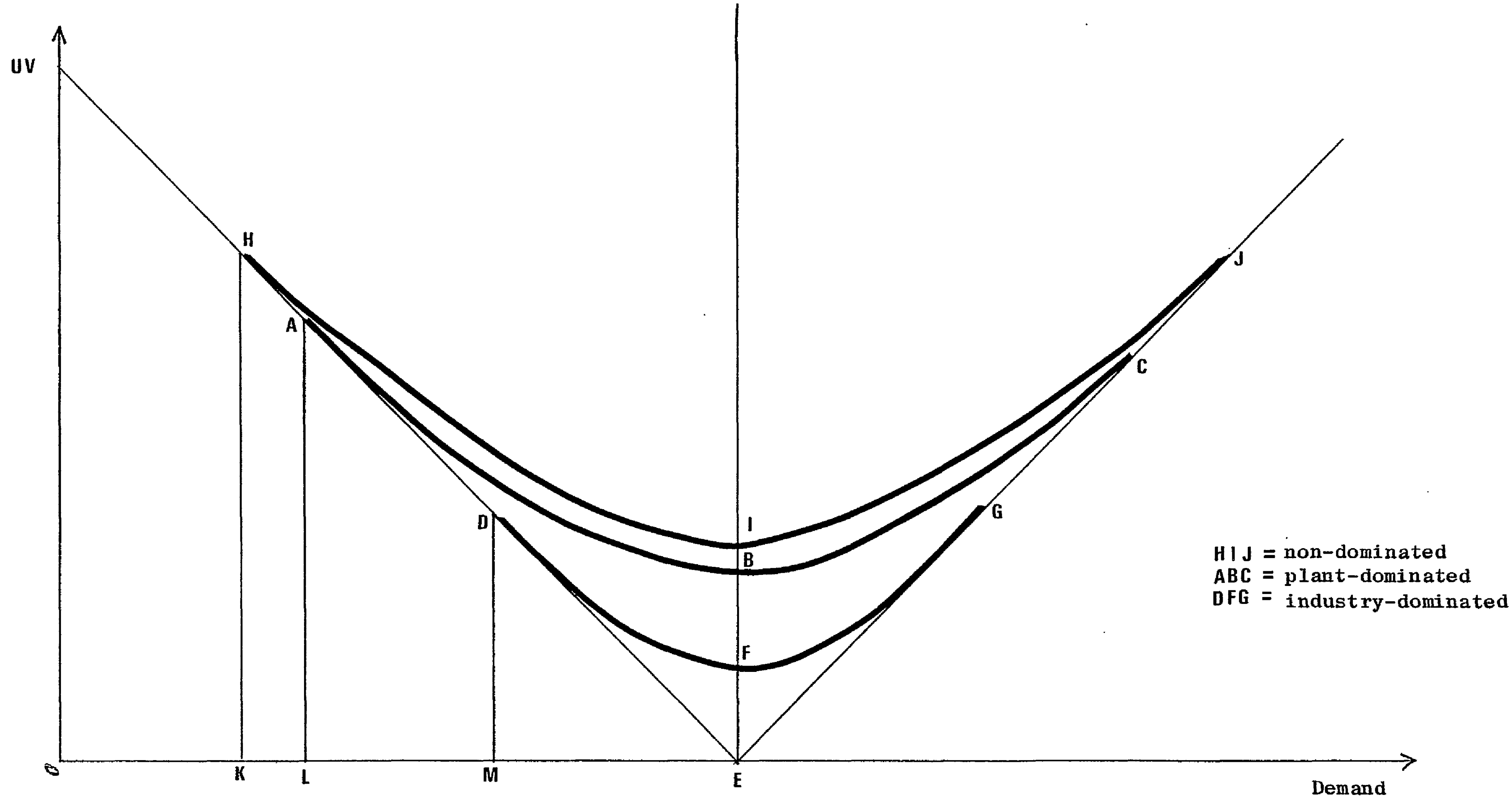
TABLE 7.8 LIM EFFICIENCY BY DOMINANCE

	U*		B		
Nature of Dominance	Value	Ranking	Value	Ranking	No. of observations
Plant Dominance	2.7	2	-0.22	1	67
Industry Dominance	1.6	3	-0.32	3	26
Non Dominance	2.8	1	-0.26	2	127
Total	2.6	-	-0.25	-	220

Note: a matrix of t-test results is given in Appendix 17

TABLE 7.9 THE NATURE OF THE UV CURVE BY DOMINANCE

	U*		B		log A		U		
Nature of Dominance	Value	Rank	Value	Rank	Value	Rank	Value	Rank	No of Observations
Plant Dominance	2.7	2	-0.22	1	0.91	2	2.8	2	67
Industry Dominance	1.6	3	-0.32	3	0.47	3	1.9	3	26
Non Dominance	2.8	1	-0.26	2	1.0	1	3.4	1	127
Total	2.6	-	-0.25	-	0.93	-	3.0	-	220



Note (i): Although for simplicity the curves in the diagram are represented as symetrical, this is not the case in the empirical work (see previous diagram). The diagram will only be symetrical if the B coefficient is unity.

imperfections appear late (see point OM in Diagram 7.2) and do not seriously hinder LLM performance as demand increases. That is shown by the line DF which lies relatively close the the optimum path DE. As a result U*, the maximum level of non demand deficient unemployment, is relatively low (1.58%) in industrially dominated LLMs. Average unemployment is also relatively low at 1.9% which, in part, probably reflects the underlying efficiency of the market. In plant dominated LLMs imperfections appear earlier (OL), whilst at the same time the relatively poor B coefficient means that its impact deepens relatively quickly as demand rises. Hence the average U* value in such LLMs is relatively high (2.7%) and so too is the average level of unemploymnt 2.8%. Finally, in non-dominated LLMs the picture again differs, albeit marginally. In this case LLM imperfections appear earliest at the point OK, although because the responsiveness of the LLM to demand changes is superior to the figure quoted for the plant dominated LLMs, the U* value is only marginally different.[16]

Table 7.10 tests the dominance-efficiency hypothesis but by controlling for unemployment levels by distinguishing between high and low unemployment LLMs. Broadly speaking the results are similar to those previously discussed, with the industrially dominated LLMs remaining more efficient than the other two groups. Although the variations between categories are substantially reduced, this fall in the variation between groups is illustrated by the reduced level of significance associated with the t-tests (see Appendix 17). That is, although the pattern of significance remains the same the associated confidence intervals are generally lower. The only difference evident in the table is that for high unemployment LLMs the level of U* in non-dominated LLMs is lower than in plant dominated LLMs. This switch in rankings is not surprising given the marginal difference between the two values identified previously. However and to explain in more detail, this switch probably reflects the

(16) Note that the diagrams also clearly illustrate the association between unemployment and LLM efficiency. That is, low unemployment areas are associated with high LLM efficiency as measured in terms of both B and U*.

TABLE 7.10 THE RELATIONSHIP BETWEEN LLM EFFICIENCY AND DOMINANCE CONTROLLING FOR UNEMPLOYMENT

Unemployment Category	U* Value	U* Ranking	B Value	B Ranking	Average Unemployment	No of Observations
Low Unemployment						
Plant Dominance	1.8	2	-0.27	1	1.7	46
Industry Dominance	1.3	3	-0.34	3	1.6	22
Non Dominance	1.9	1	-0.31	2	1.9	70
Total	1.7	-	-0.30	-		138
High Unemployment						
Plant Dominance	4.6	1	-0.11	1	5.2	21
Industry Dominance	2.8	3	-0.24	3	3.8	4
Non Dominance	4.0	2	-0.19	2	5.2	57
Total	4.1	-	-0.17	-	3.0	220
TOTAL	2.6	-	-0.25	-	-	220

relatively high B value (-0.11) associated with high unemployment plant dominated LLMs. That is, under certain more controlled conditions B in plant dominated LLM is less negative than when compared to the more general table and this will tend to increase U*.[17]

Table 7.11 presents the relationship between dominance and LLM efficiency controlling for unemployment on a regional basis. In terms of the U* measure the results for each of the regional groups are almost identical to the original uncontrolled table. That is, industrially dominated LLMs remain the most efficient with plant and non-dominated LLMs considerably less efficient. This pattern is reflected by significant t-test differences between the appropriate groups. This result is not repeated so clearly for the UV equations' B values.[18] Although the uncontrolled pattern is repeated for the low unemployment regional groupings the same cannot be said about the high and medium unemployment regions where the rankings vary quite markedly. However, in terms of the t-test results it would appear that there are no significant differences between the dominance groups for any of the three regional sub-samples. It is difficult to provide a convincing interpretation of all these results except that, although the pattern shows some variation from the uncontrolled table, the results remain similar. It is also worth noting that by introducing regional controls the variation between groups is considerably reduced making it increasingly tenuous to rank LLMs by efficiency given the measurement errors associated with estimating the UV equation. Similarly, even at this relatively limited level of standardisation there are problems associated with the limited number of observations in a few of the sub-group categories and this must cast further doubt on the validity of some of the results. Bearing these points in mind it would be sensible to treat the controlled results with some caution, and when drawing conclusions place more emphasis on the uncontrolled results.

---

(17) Under these circumstances, where rankings differ between sub-groups, that is low and high unemployment, the overall rank is determined by the largest sub-group, which in this case is the low unemployment group.

(18) This is also reflected in a limited internal consistency across the four sub-sample groups: see Appendix 16.

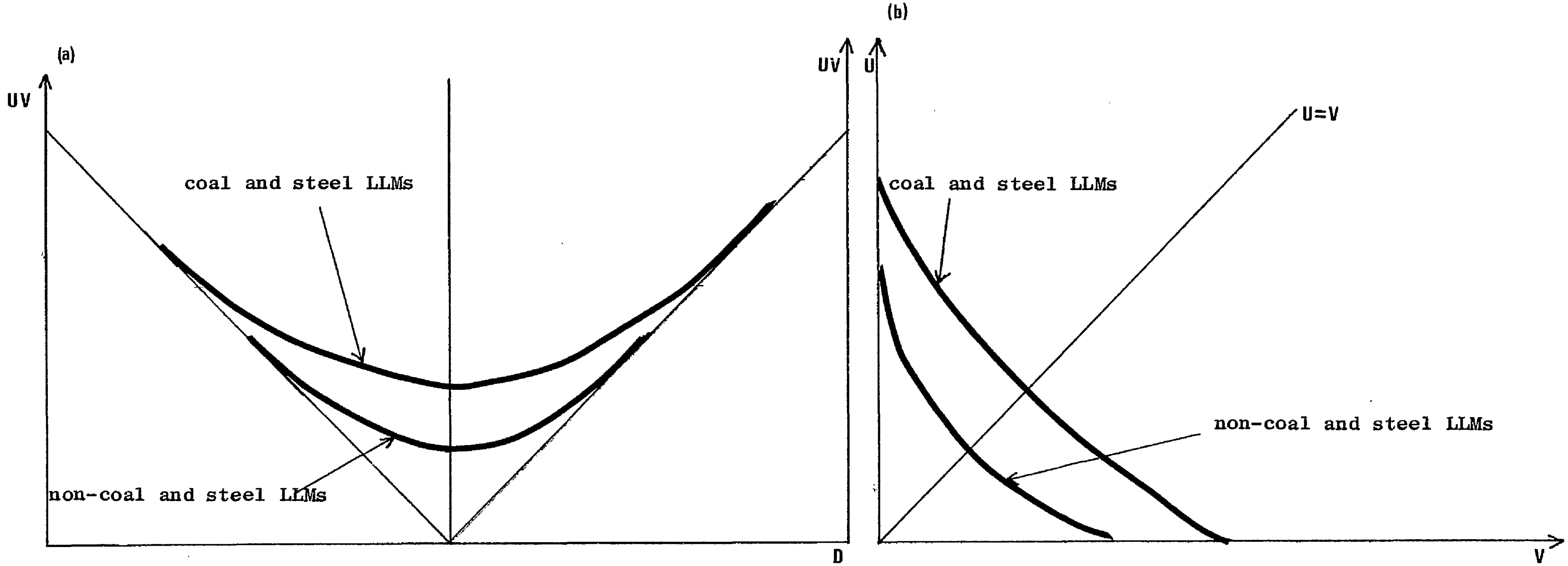
TABLE 7.11 THE IMPACT OF DOMINANCE ON LLM EFFICIENCY CONTROLLING FOR UNEMPLOYMENT THROUGH REGION

Unemployment Bands by Region	U* value	U* ranking	B value	B ranking	Average Unemployment	No of observations
High Unemployment						
Plant Dominance	4.4	2	-0.12	2	4.6	23
Industry Dominance	2.1	3	-0.10	1	2.8	4
Non Dominance	4.8	1	-0.29	3	5.6	33
Total	4.5	-	-0.11	-		60
Medium Unemployment						
Plant Dominance	1.7	2	-0.25	1	2.2	23
Industry Dominance	1.7	2	-0.26	2	2.1	13
Non Dominance	2.3	1	-0.28	3	2.8	48
Total	2.1	-	-0.27	-		84
Low Unemployment						
Plant Dominance	1.8	2	-0.32	1	1.6	21
Industry Dominance	1.1	3	-0.43	3	1.3	9
Non Dominance	1.9	1	-0.34	2	2.4	46
Total	1.8	-	-0.34	-	-	76
OVERALL TOTAL	2.6	-	-0.25	-	3.0	220

TABLE 7.12 EFFICIENCY MEASURES BY DOMINANCE EXCLUDING LLMs DOMINATED BY COAL AND STEEL

Dominance Group	U* value	U* rank	B value	B rank	No of Observations
Plant Dominance	2.3	2	-0.26	1	48
Industry Dominance	1.5	3	-0.33	3	25
Non Dominance	2.8	1	-0.26	1	127
Total	2.6	-	-0.27	-	200

DIAGRAM 7.3 THE IMPACT OF COAL AND STEEL DOMINATED LLMs ON MARKET EFFICIENCY



Summary of Values

Variable	Coal and Steel value	Coal and Steel no of obs	Non-Coal and Steel value	Non-Coal and Steel no of obs
log A	1.18	20	0.91	200
B	-0.12	20	-0.27	200
U*	3.51	20	2.6	200

The final control to be considered is that of industrial sector, which effectively means excluding LLMs dominated by coal and steel (for illustrative purposes the differences between coal and steel dominated LLMs and the others are shown in Diagram 7.3). The results of this exercise are presented in an otherwise uncontrolled basis in Table 7.12. The figures again follow the familiar pattern for the U* measure, although excluding the coal and steel dominated LLMs does relatively increase the efficiency of the plant dominated LLMs as predicated by the original hypothesis. This increase in efficiency is less evident for the B statistic in that as before the industrially dominated LLMs have the most highly negative B value followed jointly by the plant and non-dominated LLMs. Although the figures are not reported in the main text the same general pattern persists when unemployment and regional controls are introduced into the analysis (see Appendix 16). Overall, therefore, despite the differences between coal and steel dominated LLMs and the other sections the results in Table 7.12 show that their exclusion only marginally affects the conclusions drawn previously.

To conclude this section it appears from the figures produced above that there is some evidence to support the hypothesis that LLM efficiency is influenced by dominance, but that the impact varies between the industry and plant dominated sub-groups. More specifically, the results suggest that industrially dominated LLMs are the most efficient group, but that there are no significant behavioural differences between plant dominated and non-dominated groups. Although the extent of these differences varies depending on the type of control being used, the more detailed analysis tends to repeat the more general conclusions.

3 VARIATIONS IN EFFICIENCY WITHIN DOMINATED LLMs

On the basis of the original hypotheses relating dominance to LLM efficiency, and bearing in mind the results of the previous section, it would seem reasonable to assume that the more dominated a LLM then the more efficient it will become. This proposition is

TABLE 7.13 THE RELATIONSHIP BETWEEN HIGH AND LOW DOMINANCE AND LLM EFFICIENCY

(i) Plant and Industry Dominated LLMs

Level of Dominance	U* value	U* ranking	B value	B ranking	No Of Observations
Low Dominance	2.2	2	-0.28	2	60
High Dominance	2.6	1	-0.20	1	30
Total	2.4	-	-0.25	-	90

(ii) Plant Dominated LLMs

Level of Dominance	U* value	U* ranking	B value	B ranking	No of Observations
Low Dominance	2.6	2	-0.25	2	39
High Dominance	2.9	1	-0.18	1	26
Total	2.7	-	-0.22	-	65

(iii) Industry Dominated LLMs

Level of Dominance	U* value	U* ranking	B value	B ranking	No of Observations
Low Dominance	1.6	1	-0.34	2	21
High Dominance	1.2	2	-0.28	1	4
Total	1.5	-	-0.33	-	25

examined on an uncontrolled basis in Table 7.13.[19] [20] The figures show that for plant and industry dominated LLMs combined (Section i of the table) the expected relationship does not exist, and indeed the opposite appears to be the case with the U* and B indices less efficient in the more dominant areas. This result, however, is only confirmed statistically in the case of the B value where the difference in efficiency between the two groups is significant at the 95% confidence level. This pattern of results is sustained even when controlling for unemployment and region (see Appendix 16).

The above result is less clear cut when distinguishing between plant dominated and industry dominated groups (see Table 7.13 Sections ii and iii). Although the results for the plant dominated group are the same as before there is some evidence to suggest that in the industry dominated group LLMs with higher levels of dominance. However, even controlling for the level of dominance industry dominated LLMs are still more efficient than plant dominated LLMs are more efficient in that the U* measure is lower in the more monopsonistic LLMs. However, the extremely limited number of observations in the high dominance category implies that little confidence should be placed on the result. This conclusion is supported by t-test results which indicate that within acceptable confidence levels there is no significant difference between the groups for either measure of efficiency.

---

(19) The split between high and low dominance groups was subjectively set at 22.5% of the LLMs manufacturing population.

(20) The relative bias towards the high dominance category in plant dominated LLMs may explain why the plant dominated LLMs as a group are less efficient than industry dominated LLMs.

Within the dominated group another important factor which may lead to variations in LLM efficiency is the nature of the dominating industry. The importance of this variable for LLM efficiency has already been suggested by previous studies (for example see Bowers etal, 1970), although without any particular theoretical basis. In this section, however, the arguments are examined in more detail by testing the hypothesis developed in Chapter 6 which specifically relate industrial characteristics to LLM performance. Briefly, this hypothesis suggested that both declining and expanding industries would tend to be associated with inefficient LLMs since both groups would tend to face a mismatch between labour supply and demand. In contrast, the most efficient dominated LLMs will be those associated with well-established but relatively bouyant industries where unemployment and vacancy mismatches are, as a result, less likely to appear.

The results of analysing both plant and industry dominated LLMs by sector are presented in Table 7.14. Although the number of observations in each sector is limited, and therefore the results are necessarily subject to qualification, it is still possible to draw some general conclusions related to the hypothesis under test. One of the most striking features of the table is that the variation between industries in terms of both U* and B is substantial and hence the figures seem to support the underlying proposition that efficiency is in part influenced by industry. For example, the value of U* ranges from 0.9% in rubber through to 4.1% in the case of coal mining. Similarly the value of B extends from a maximum of -0.05, again in mining, to a minimum of -0.47 in timber related products.

In terms of the arguments relating efficiency to the growth characteristics of specific industry Table 7.14 compared with Table 7.15 seems to provide support for the propositions developed in Chapter 6. For example, and although U * and B are not perfectly related, it would appear that with respect to both measures of LLM efficiency the most inefficient industries are coal mining, iron and steel, electronics and electrical machinery and chemicals. That is, many of the LLMs dominated by rapidly expaning or declining industries (see Table 7.15) are the most inefficient. This is true both in terms of the maximum level of non demand deficient unemployment in these LLMs and their responsiveness to market changes. In other words, the problems of a UV mismatch are highest in these areas, which again supports the hypothesis proposed in Chapter 6. Conversely the most efficient LLMs are dominated by industries which include rubber, paper and board, glass, pottery and bricks, food and drink, vehicles and metal goods NES. All of these industries are relatively well-established and between the period 1951-1975 were not subject to drastic changes either through expansion or contraction (again see Table 7.15).[21] Once again therefore, these results seem to be consistent with the hypothesis developed in Chapter 6. However beyond this rather general statement it is difficult to make any more precise or meaningful comments given that the industries in question cover such a wide range.[22]

---

(21) There are also industrial sectors which do not seem to follow the predicted pattern. For example, iron and steel although relatively stable between 1951 and 1971 still has a relatively low level of LLM efficiency. This may, of course, reflect their dramatic changes in the industry between 1971 and 1975, the date the UV data series ends. The other two industries not following the anticipated pattern are textiles and footwear since, although both sectors declined significantly over the period, their efficiency levels have remained about average.

(22) As mentioned previously there are differences between the industrial composition of plant dominated and industry dominated LLMs. Unfortunately, because there is not a significant enough overlap between the two groups, it is not possible to compare variations in U* and B on an industry basis. However, it does not seem that the differences in industrial structure helps explain the variations in efficiency levels between the two groups.

TABLE 7.14 DOMINATED LLMs : VARIATIONS IN EFFICIENCY BY SECTOR

Industry	U*	B	No of Observations
Coalmining	4.07	-0.05	11
Food & drink	1.81	-0.23	6
Chemicals	3.50	-0.12	3
Iron & steel	2.83	-0.20	9
Mechanical engineering	2.44	-0.30	8
Electronics & electronic Engineering Machinery	3.12	-0.26	9
Shipbuilding	2.16	-0.33	10
Automobiles	1.70	-0.25	5
Metal goods NES Cans metal boxes	1.28	-0.39	1
Textiles	1.49	-0.28	12
Footwear	1.25	-0.31	7
Glass, pottery & bricks	1.60	-0.45	1
Timber	2.02	-0.47	1
Paper & board	1.45	-0.36	3
Rubber	0.90	-0.24	1
Double dominated LLMs	2.41	-0.28	6
Total	2.37	-0.25	93

TABLE 7.15 INDUSTRIAL CHANGE 1951-1971

Industry	Nos Employed 1951 (000s)	Nos Employed 1971 (000s)	Percentage Change 1951-71
Coal Mining	675	307	-54
Food & Drink	535	552	+ 3
Chemicals	397	492	+ 24
Iron & Steel	253	246	- 3
Mechanical Engineering	826	1084	+31
Electrical Engineering	538	791	+47
Shipbuilding & Marine Engineering	200	139	-30
Vehicles	689	751	+ 9
Other Metal Goods	442	494	+12
Textiles	868	515	-41
Footwear	124	94	-24
Brick, Pottery, Glass etc.	292	283	- 3
Timber	60	77	+28
Paper & Board	65	67	+ 3
Rubber	95	108	+14

Notes: (i) The 1971 figures were taken from the Economic Activity Analysis Section of the Census; Table 18, p.196. The figures represent a 10% sample scaled up. The figures are based on the returns for England and Wales.

(ii) The 1951 figures were taken from The Industry Tables Section of the Census Table 1 beginning on p 4. The figures are based on the returns for England and Wales.

(iii) Changes in SIC groupings have been taken account of in the calculations.

The Impact of Plant Dominance on Employer Personnel Policy and Local Labour Market Behaviour

(Volume 2 of 2 Volumes)

CAMERON IAN McPHAIL

Submitted in fulfillment of the Requirements for the Degree of Doctory of Philosophy,

Department of Social and Economic Research
University of Glasgow,

January 1982

APPENDIX 1

THE DEFINITION AND IDENTIFICATION OF LOCAL LABOUR MARKETS

This appendix is divided into three sections: firstly, the theoretical considerations associated with defining local labour markets are considered; secondly, the local labour market selection criteria adopted by the project are discussed; and third and finally, the characteristics of the identified local labour markets are reviewed.

1 THE DEFINITION OF LOCAL LABOUR MARKETS : THEORETICAL CONSIDERATIONS

The distinguishing characteristic of a labour market, as opposed to other markets, is that the commodity being bought is physically inseparable from the seller. Therefore the buyer (the employer) and the seller (the employee) must coexist within some reasonable geographical distance. The determinants of the scope of this hinterland differ between employer and employee.

For the employee the labour market may be viewed as the geographical area within which he is prepared to offer himself for employment at a specific wage. For each pecuniary and non-pecuniary "benefit package" offered to the worker by a particular job there will be a geographical limit to the distance he will be prepared to travel which is determined largely by the costs of movement. Clearly, for a better package the worker will be prepared to spend more on daily travel and therefore the larger will be the area covered by the worker's labour market. The geographical labour market of an industrial worker, then, will consist of the spatial limits to his daily travel for each potential employment package. As the boundary extends further from his home the more attractive the benefits package has to become in order to induce the worker to travel. The boundary becomes a gradient, and as it extends the number of jobs the worker is prepared to accept becomes smaller.

Although the cost of travel will set the outer limits of the geographical labour market of the employee, there will often be additional factors constraining this boundary. In particular, the nature and extend of information networks in the labour market will be important. More specifically, empirical evidence suggests that, especially in a slack labour market, employees and employers make considerable use of informal information channels when searching for employment or employees and these informal networks are likely to be geographically restricted. Information on job vacancies will be passed on verbally and will only filter slowly beyond the immediate neighbourhood of the current employees of a company.(1) For an individual this means that although his potential labour market area (as determined by travel to work costs) is fairly large, in fact it may be much more restricted because of the way in which informal information networks tend to only permit him to learn about a limited number of job opportunities. Therefore, whilst the gradient of the boundary to his labour market, as set by travel costs, may be gradual, this slope will be sharply reinforced by the imperfect operation of information networks.(2)

From the point of view of the employer, he will have a separate labour market area for each group of occupations within the organisation depending on the benefit package offered to the employee. For occupations offering similar packages employees and potential employees can be expected to live within a geographical area set by the travel costs that workers in that particular category are willing to incur in their journey to work.(3)

---

(1) The importance of informal recruitment methods is well known and well documented. For example, see MacKay et al (1971, PP231-257), or Rees & Shultz (1970).

(2) See Stigler (1962) for a discussion on how the costs of imperfect information restricts search activities, and by implication the extent of a worker's effective local labour market.

(3) Once again in practise, information deficiencies may well restrict the extent of the local labour market boundary.

In general, the higher the costs of travelling to the place of work, the lower the probability that an employer will be able to recruit workers from a particular area. The better the package being offered by the employer, the wider the geographical boundary of the labour market. Employers are in a somewhat unique position in defining job-hinterlands in that they are able to alter the shape and size of their labour markets by changing the basic parameters of travel costs through the benefit package being offered. Increasing wages or, for example, offering free travel to work will widen the scope of the labour market for a particular group of workers. In general, these measures may be considered as an additional labour cost to which recourse is only made when the labour supply within the original boundaries become inadequate. Employers are also able to discriminate in favour of or against a particular locality on the basis of past recruitment experiences regarding absenteeism, productivity, turnover and quits.

Given these determinants of local labour market boundaries the mapping of a labour market for a group of employees and employers is extremely complex. In its simplest form it will consist of a series of overlapping circles as the geographical labour markets of different employees and employers merge with one another.(4) However, by taking a particular geographical unit and examining the labour market of workers and employers located within the area the nature of that areas as a local labour market may be defined and subsequently classified by two variables, each of which measures a separate component of worker movement.

The first variable relates to the boundary of the area and is determined by the extent to which the individual markets, or journey

---

(4) Differences in accessibilities will, of course, ensure that the markets are not circular. Indeed, a firm's labour market will tend to be star shaped along the main transport routes.

to work patterns, of all workers and employers within that boundary extend beyond the boundary. The less the individual markets extend beyond the boundary, the more closed the boundary and the higher the degree of self-containment displayed by the market. Local labour market self-containment may be measured by two separate components, both related to journey to work patterns: the first measure is the proportion of resident workers who are employed outside the area; the second measure is the proportion of those who work inside the boundary but who live outside. In other words, the two components refer to the labour market of workers resident in the area and to the labour market of employers located within the boundary.

The second variable delineating a local labour market relates to the internal density of the market (see Goodman, 1971). Internal density is a function of the extent to which any particular point in a geographical area lies within the labour market boundary of all individuals and employers in the area. Internally dense or active markets will be spatial configurations where the labour markets of both individual's and employer's journey to work boundaries cover the entire geographical area. Diagram A1.1 outlines in conceptual terms the basic differences between an internally dense labour market and an internally sparse labour market. In the internally dense market (Figure A) the journey to work patterns generated by the employees cover the entire geographical unit. Every part of the area is well connected with the remainder of the unit. The same is not true of an internally sparse unit as Figure B shows. In this instance it is clear that the journey-to-work patterns do not cover the specified area since parts of the unit are not affected by journey to work movements. Furthermore, the existing journey to work patterns relate to sub-sections of the larger unit with little evidence of flows between the adjacent cells. The concept of internal density therefore is important since to some extent it measures the level of unification or locality in a local labour market configuration.

It is difficult to operationalise the internal density variable using travel-to-work data, since the definition demands that by

DIAGRAM A1.1 REPRESENTATION OF LOCAL LABOUR MARKET INTERNAL DENSITY

Figure A-Internally Dense Area

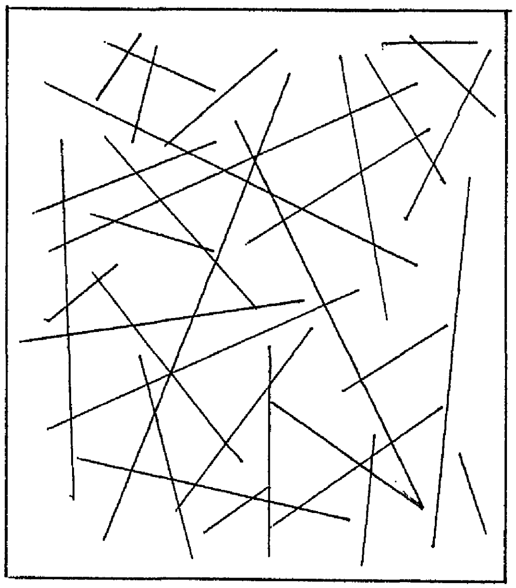
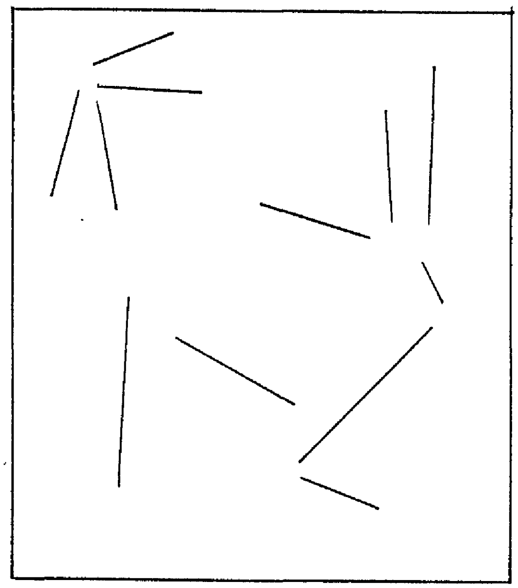


Figure B-Internally Sparse Area



Note: (i) each line illustrates a journey-to-work or a series of journeys.
(ii) although each local labour market is equally self-contained internal density varies dramatically.

taking any part of a geographical area there should be a high level of journey-to-work movement both in and out of this sub-area and from almost any other part of the geographical unit. Indeed for the market to be dense and closed the flow of workers between any two parts within the market should be greater than the flow from a point in the market to a point outside the boundary. That is, a high degree of intra-boundary movement should be apparent unifying the local labour market. This is a difficult condition to achieve, however, in view of the considerable variation in journey to work time for different occupational groups which, as noted above, is related to variations in pay levels.(5) For example, it might be totally inappropriate to think of a local, as opposed to a regional or national, labour market for highly paid professional male occupations. Indeed Hollingsworth (1970) using 1961 Census data has shown that rates of migration involving moves of over 40 miles are over four times higher for professional workers than for manual workers. Accordingly, a local labour market definition using journey-to-work data can only hope to identify geographical units representing local labour markets for almost all female workers and most male manual workers.

Accepting that local labour market self-containment and internal density are the two major determinants of a local labour market area, then it is possible to devise an 8-way typology of geographical configurations, only one of which constitutes a self contained and internally dense local labour market. This typology is presented in Table A1.1, and cell seven is the only classification constituting both a self contained and internally dense local labour market. Therefore, in the process of empirically identifying local labour markets, areas with characteristics other than cell seven will be rejected since they fail to satisfy one or other, or both, of the necessary conditions associated with the definition of local labour markets.

---

(5) Of course journey to work considerations are also affected by other considerations besides pay levels, and in particular transportation networks and the time taken to get to work.

TABLE A1.1-CONFIGURATION OF POSSIBLE LOCAL LABOUR MARKET STRUCTURES

Proportion of economically active residents working outside the Area	Proportion of workers resident outside the area			
	High		Low	
	Internally dense	Internally sparse	Internally dense	Internally sparse
High	(i) Small area within larger conurbation	(ii) Large town/ area within industrial region	(v) Small town	(vi) Commuter belt round an employment centre.
Low	(iii) Employment centre of potentially self-contained market	(iv) Large employment centre of large conurbation	(vii) Self-contained local labour market	(viii) Large conurbation

2 THE IDENTIFICATION OF LOCAL LABOUR MARKETS : ADOPTED SELECTION CRITERIA

The definition of a labour market as a geographical unit where travel to work patterns are internally dense, and where there is a minimum of cross-boundary travel provides a sufficient theoretical base upon which to empirically identify local labour markets. That is, using indices of self-containment and internal density to define labour markets it is possible to allocate most geographical units to a local market. The only substantive problem remaining is to explicitly quantify what constitutes "self-contained" and "internally dense". For the purpose of this study, and in the absence of any theoretically meaningful alternative, the threshold values for containment and density were set on a pragmatic basis. The choice of cut-off point and the reasoning behind their selection are discussed below along with the data used and the results achieved.

2.1 Self-Containment Levels

In terms of measuring self-containment the only source of sufficiently detailed information is the 1961 Census Journey to Work Tables which measure the extent to which workers cross Local Authority boundaries.(6) For the purpose of defining local labour markets these figures were analysed by examining the number of resident employees working within the area expressed as a proportion of the total number of resident employees, and as a proportion of total numbers working in the area. The first measure is an indicator of the extent to which the area's resident workforce is also employed within the area. That is, the index measures the extent of resident employee movement to beyond the boundary of a specified geographical unit.(7) The second measure indicates the degree of inward migration of workers to an area; the index therefore measures the extent of inward cross boundary movement.(8)

The only problem in using these figures as a basis for defining local labour markets is to decide at what level an area becomes self-contained. Unfortunately, the self-containment criteria selected must necessarily be arbitrary, since there is no obvious or readily acceptable threshold delineating what constitutes a sufficiently self-contained local labour market. Therefore, and on the basis of largely pragmatic considerations, it was decided that to qualify as self-contained a labour market had to have at least 70% of the resident employed population working in the area, and 70% of the working population also had to live in the area. The prime reason

(6) At the time of writing, figures from the 1971 Census were not available and some data for areas under a population of 15,000 were unavailable in the 1966 sample survey.

(7) For example, if the resident employed population is 100 and the resident employees also working in the area number 50, then 50% of the resident employed population are employed outside the area.

(8) For example, if there are 50 resident employees working in the area, and the total number of employees in the area are 100, then 50 workers (50% of the area total) must reside beyond the area's boundaries.

for choosing 70% as a cut-off was to provide a sufficient number of local labour markets for the subsequent identification and analysis of the dominated sub-group. Choosing a high cut-off would have restricted the number of suitable local labour markets, and may have reduced the number of dominated local labour markets to a level where statistically meaningful analysis would not have been possible. The 70-70 threshold may, therefore, be interpreted as a rather liberal selection criterion. Nonetheless, having specified constraints which are not particularly stringent will help identify the effects of a range of self-containment levels on the functioning of local labour markets at a later stage of the analysis.(9)

Not surprisingly, most Local Authority areas standing in isolation failed to meet the set self-containment requirements. This was largely because the areas under consideration were too small and there was a significant amount of cross boundary journey-to-work movement. To overcome this problem it was necessary to join contiguous Local Authority areas. Fortunately it was possible to avoid many of the tedious calculations associated with aggregation since much of the required work had been previously undertaken in a related research project (Smart, 1974), which was also based on 1961 Census Journey to Work statistics. Smart's objective was to divide all of the UK into local labour markets using the Census material based on Local Authority Areas. Briefly, Smart achieved this by starting with the "weakest Local Authority Areas", where either the proportion of residents working outside or the proportion of workers resident outside was highest. Smart then attempted to link them to all other adjacent areas by using a formula which took account of the flows of workers between the areas

---

(9) That is, whether highly self-contained labour markets behave in markedly different ways from areas which are much less isolated, and at what levels of self-containment these differences emerge, are empirical questions which can be addressed later.

relative to the resident employed population of the areas.(10) The Local Authority areas with the highest link values were the first to be aggregated. Smart then repeated the process until all Local Authority areas had been allocated to a local labour market.

Therefore, by taking advantage of Smart's existing worksheets, it is possible to identify local labour markets without having to calculate the link values between different areas. However, because the underlying aim of Smart's study differed considerably from those of the dominant plant research it was necessary to reinterpret and subsequently adjust many of Smart's calculations in order that the selected local labour markets matched the dominant plant study's 70-70 self-containment threshold. The first major adjustment to Smart's calculations involved the Local Authority aggregation process. Using the dominant plant definition of self-containment, aggregation stopped once the threshold 70-70 criterion was reached. Adopting this procedure implies that several Local Authority areas are not allocated to any local labour market configuration. Nonetheless, in many respects this approach is a more realistic method of delineating local labour markets than the procedures adopted by Smart in that many of Smart's final local labour markets were fairly large and therefore probably not internally dense. That is, quite frequently in Smart's analysis a local labour market would comprise an area which although self-contained would have non self-contained areas added to it so that all Local Authority areas were part of a local labour market.

---

(10) The actual specification of the formula for the creation of the link values was:

$$\text{link value} = \frac{a^2 + b^2}{xy}$$

where a = the number travelling to work from area A to area B
b = - do - B to area A
x = the resident population in area A
y = - do - B

The second difference between Smart's work and the dominant plant study was that Smart's definition of self-containment required that the resident employed population working in the area should constitute at least 75% of both the resident employed population and the day employed population. This compares to the dominant plant project's threshold of 70% for both indices. In practical terms this meant that where Smart's worksheets reached a level of 70-70 self-containment this was considered sufficient for the dominant plant study and further aggregation was ignored.

In sum therefore, it was possible to calculate local labour market self-containment on the basis of the 1961 Census Journey to Work tables and the calculations used in Smart's work on defining local labour markets. However, the selection criteria adopted by Smart differed from the dominant plant methodology both in terms of the acceptable cut-off point and the method of aggregation used. Consequently, many of Smart's original calculations were reworked to produce results more suited to the requirements of the dominant plant study.

2.2 Internal Density

With respect to calculating the internal density of geographical areas as a means of defining local labour markets, it is not possible to take advantage of Smart's work, since the concept of internal density was not considered to be relevant to the research.(11) In addition, it is also not possible to calculate

(11) Smart ignored internal density because he was primarily concerned with allocating every Local Authority area to a local labour market irrespective of the resultant journey-to-work movements within the configuration. This is a major drawback to Smart's work since the presence of a sufficiently high internal density is a necessary consideration when meaningfully delineating local labour markets. Without a sufficiently high internal density it is unrealistic to claim that any geographical area is either a local or unified market. As Goodman (1970) warns: "the degree of seeking to extend perfection (by minimising cross boundary flows) at the expense of losing the essentially local character of the market must be guarded against".

internal density directly from Census Journey to Work tables as these statistics only relate to travel involving employees crossing Local Authority boundaries. As no alternative information is available to help in calculating internal density it was necessary to adopt a proxy measure for the variable. The most appropriate and only readily available proxy is local labour market size. The choice of size as a proxy for internal density reflects the fact that the cost of a journey to work increases with distance, and therefore the willingness of the worker to travel, varies inversely with size. Therefore, generally speaking the larger the geographical size of a local labour market the lower the probability that a worker will be willing to commute anywhere within the boundary, and therefore the lower the internal density. Accepting this, it was decided to impose a constraint on the acceptable size of local labour markets as a direct substitute for a measure of internal density. The size constraint was set at 50,000 acres which represents approximately 80 sq. miles. If this area was roughly circular, an employee living in the centre of the local labour market would have a maximum journey-to-work of about 6 miles in order to reach all parts of the market.

This size constraint is again an arbitrary figure which may err on the large side when it is remembered that a significant proportion of women and lower paid manual workers walk to work.(12)(13) A further possible shortcoming of the proxy is that a maximum physical size constraint ignores differences between areas in terms of public transport and general accessibility. Allied to this, the proxy does not take into account the spatial configuration of different workplaces and residences within the local labour market which could also have a significant impact on journey-to- work patterns and therefore internal density.

---

(12) One study (National Board for Prices and Incomes, 1971) showed that 40% of women and 25% of men walked to work.

(13) Selecting a large local labour market area as a cut-off for an adequate measure of internal density will allow subsequent testing within the selected group as to whether local labour market behaviour is sensitive to size.

However, the fact remains that some form of constraint has to be set in order to reject local labour markets which meet the self-containment threshold, but do not have a meaningfully high internal density.(14)

2.3 Exceptions to Selection Criteria

Although the two basic ground rules for the identification of local labour markets are that they should be self-contained and internally dense, further pragmatic considerations dictate that, in a number of special cases, these rules should be either augmented or relaxed.

The first exception concerns the introduction of a minimum population figure, either set out in terms of an absolute number or expressed as a population density. That is, given that the main purpose of this study is to examine the behaviour of industrial labour markets, and particularly local labour markets dominated by a single large manufacturing plant, it is necessary to exclude from the selected local labour markets areas which have inadequate populations to support a sufficiently well developed industrial environment or a major manufacturing plant. Accordingly, it was decided to restrict the selection of local labour markets to "urban areas".(15) In addition, it was also decided to exclude local labour markets where the total urban population resident within the

---

(14) The types of area this constraint is particularly designed to eliminate are conurbations where there is continued "chaining" of adjacent areas without ever reaching a reasonable level of self-containment, and large sparsely populated rural areas.

(15) Although urban areas may be defined in terms of population densities this is not particularly useful as such figures are only available at ward level in the Census. Urban areas were therefore arbitrarily defined as Census areas designated as Urban Districts, Metropolitan Boroughs and Country Boroughs, although some note was taken of Rural districts containing wards with population above or near densities of one person per acre.

labour market was less than 10,000, since it was felt that this would be the minimum size whereby a local labour market could realistically be expected to contain a major industrial plant employing at least 1,000 workers.(16)

The second group of exceptions concerned what may be termed underbounded towns. The problem arises when a labour market area is composed of an Urban Area (or occasionally two or more adjacent Urban Areas) which is attached to a Rural District (or occasionally two or more Rural Districts) and becomes a self-contained local labour market but with an overall size of over 50,000 acres. Under normal circumstances such a configuration would be rejected as being too large. However, if the Urban Area is clearly a Job Centre (that is the Urban Area has many more jobs than resident employed population) and the resident employees working in the area comprise more than 70% of the resident employed population, then there is clearly the possibility that the Urban Area itself only avoids becoming a self-contained labour market because some of the Job Centre's suburbs fall outside its administrative boundary. That is, underbounding describes a situation where the administrative boundaries of an Urban Area are clearly located within the built up area which constitutes the town.

---

(16) The arithmetic behind the 10,000 population constraint is relatively straightforward. The main interest of the project is in manufacturing and extractive industries, and such industries employed approximately 40% of the working population in 1966. Assuming that the smallest dominant plant of interest has a workforce of 1,000 and that in the most dominated area the main plant employs only half the labour force in manufacturing and extractive industries, this implies that there should be a minimum labour force in the area of around 5,000 workers. With an economic activity rate of around 50% this implies a total population size of 10,000. The assumption that the smallest dominant plant will have 1,000 employees is also arbitrary, but a figure does have to be fixed if an adequate control group is to be selected at a later stage of the analysis given the impact of size on plant personnel policy. Moreover, if much smaller dominant plants were considered appropriate there would be serious data problems identifying the plants involved. Finally, since it was anticipated that the research would require sending out a postal questionnaire it was decided to focus on large establishments given the notoriously poor response rate associated with small plants.

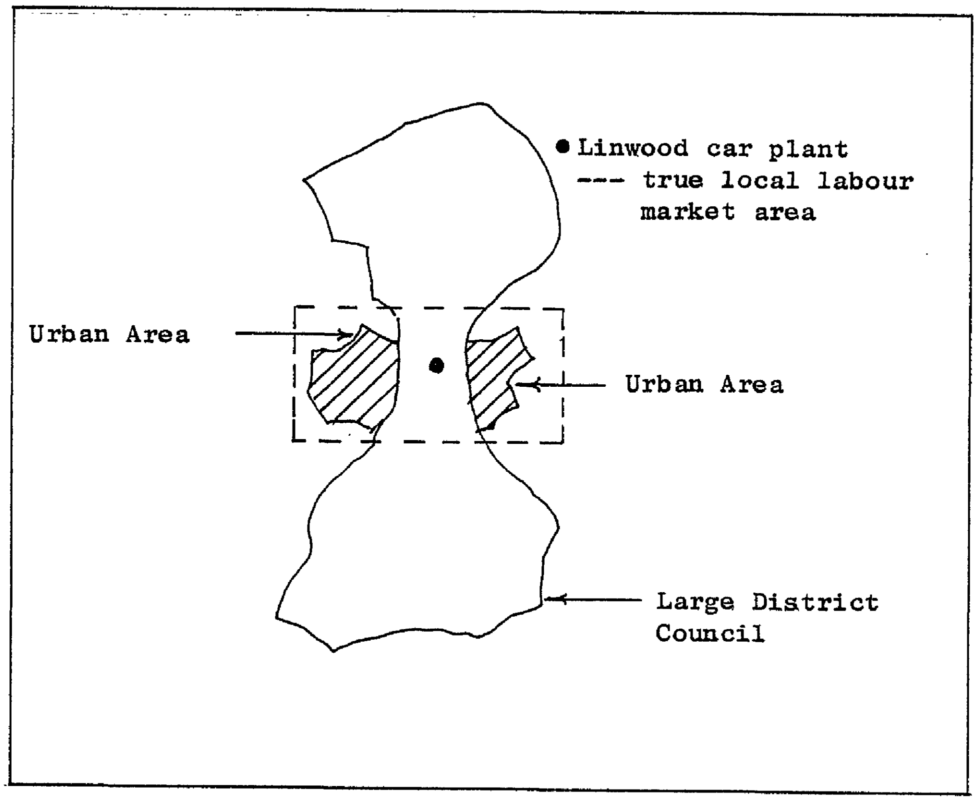
Where underbounding occurs the areas concerned have been accepted as local labour markets, the argument being that if the administrative boundary included this contiguous residential area then the towns would become self-contained labour markets. Underbounded towns were largely identified from the inspection of Ordinance Survey maps and the further analysis of Journey-to-Work tables. If the map indicated that there were residential areas of some size outside the administrative boundary, but contiguous to the towns and with substantial cross boundary travel, then the Area was accepted as a local labour market.(17)

Although the simplest cases of underbounding reflect the relatively common occurrence of a town expanding beyond its borders there is, however, another category of underbounding. In this case Urban Areas fail to achieve self-containment as a result of a large factory or industrial estate immediately outside the administrative area. A prime example of this problem concerns the now closed Talbot car plant at Linwood in Scotland where the self-contained area includes not only the towns of Paislsy and Johnstone, but also two District Councils (see Diagram A 1.2). The problem is that the two towns are separated by a small strip of District Council land which includes the car plant and the small settlements of Linwood and Elderslie. In total these areas exceed the 50,000 acre constraint. Nonetheless, it seems reasonable to assume that Paisley, Johnstone, and the small strip of District Council land separating the two should be considered as a local labour market and

---

(17) Appendix 4 includes a complete list of underbounded local labour markets. A good example is Derby Country Borough where in 1961 98% of the Resident employed population worked in the town but only 56% of these working in the town were resident in the area. Inspection of the local Ordinance Survey map revealed a considerable residential area immediately outside the 1961 County boundary in South-East Derbyshire Rural District. If this area had been included within the County boundary then over 70% of the population working in the new area would have been living in the new area. Accordingly the area was accepted as a local labour market.

DIAGRAM A1.2 : PAISLEY AND JOHNSTONE LOCAL LABOUR MARKET : AN EXAMPLE OF UNDERBOUNDING



the rest of the District Council land ignored. Therefore, this area was accepted as a local labour market.[18]

A third group of exceptions arose with areas consisting of a group of contiguous towns surrounded by Rural Districts but which in total cover more than 50,000 acres. In Smart's process of aggregation it was always the weakest areas which were aggregated first. Occasionally, therefore, in these situations a Rural District would be attached to one Urban District whilst another Rural District would be linked to a separate Urban Area. Only then would the two resulting combinations be linked together. For the

(18) The small number of towns with similar characteristics are also listed in Appendix 4.

purposes of the dominant plant research, therefore, occasionally the linking process was changed by aggregating the two Urban Districts first and ignoring the Rural Districts.(19)

Also in the final list of accepted local labour markets are a few areas which fell just below the minimum population size of 10,000 or just exceeded the acreage constraint. This was thought justifiable if there was a particularly high level of self-containment. Finally, one Rural District (Easington, Co. Durham) was included as a labour market area because it contained one large parish of over 11,000 population at a density of 11 persons per acre.

3 CHARACTERISTICS OF IDENTIFIED LOCAL LABOUR MARKETS

Apart from a few exceptions, the five criteria developed for selecting local labour markets based on both theoretical and practical considerations were as follows:

(i) At least 70% of the resident workers were employed within the local labour market area.

(ii) At least 70% of the workforce resided within the labour market area.

(iii) There were 10,000 employees in the area in 1971.

(iv) The defined local labour market did not exceed 50,000 acres.

(v) The population density exceeded one person per acre.

(19) An example of this is Royal Leamington Spa which in Smart's procedure was linked to the Rural District before being added to Warwick MB: the result being that the final area was too large for consideration as a local labour market. In fact, Leamington and Norwich are contiguous and if they are joined directly form a small and self-contained local labour market.

Using these rules, and taking account of exceptional circumstances, yielded 299 local labour markets distributed throughout the United Kingdom. The principal characteristics of the identified local labour markets are presented in Table A12. The figures indicate that the local labour markets are fairly evenly distributed throughout the Regions, considering existing population densities (see also the map of local labour markets in Appendix 5). Nevertheless there does seem to be a disproportionately high number of local labour markets in the S. West, E. Midlands and the North. Correspondingly, the figures also point to a proportionately low number of local labour markets in the S. East and W. Midlands.(20) To some extent this pattern reflects the industrial and demographic characteristics of the regions concerned.

On average the identified local labour markets cover a significant proportion of total United Kingdom population; 25.9m people or 51% of the 1961 population. As the figures show the extent of population coverage varies considerably between regions. Again this variation largely reflects the economic and geographical attributes of the Regions. For example, in the S. East the local labour markets only cover 27% of total population. This low figure is largely a result of excluding most of the Greater London Area as a local labour market since the prospective local labour market areas could not be distinguished from surrounding areas in terms of Journey-to-Work patterns. Other Regions where population coverage was below average were Wales and E. Anglia. In this case the result probably reflects the predominantly rural nature of these areas which results in many otherwise acceptable local labour markets failing to meet the acreage constraint.(21)

---

(20) See the final columns of the table for details. For example, dividing the total regional population by the number of local labour markets identified gives a figure of 85 for the S. West at one extreme, and 262 for the S. East at the other. Therefore, there are considerably more local labour markets per head of population in the S. West compared to the S. East.

(21) Note, therefore, that both highly industrialised areas (for example the South East) and predominantly rural areas (for example, E. Anglia) both tend to reduce the level of local labour market coverage.

TABLE A12 : CHARACTERISTICS OF IDENTIFIED LOCAL LABOUR MARKETS

REGION	Number of LLMs	Total Popn in LLMs (000s)	Average Population (000s)	Average Acreage (000s)	Popn Density (People/Acre)	Proportion of Total(1) Regional Emp.	Self-Containment Part 1	Self-Containment Part 2	Composite Self-Containment	Total Po No. of LLMs
SCOTLAND	31	2,938	95	15.2	6.2	57	85.2	81.3	165.5	167
WALES	19	1,250	66	17.2	3.8	47	82.2	78.0	160.2	139
NORTH	27	2,222	82	14.3	5.7	68	81.0	81.0	162.0	120
N. WEST	37	4,746	128	17.6	7.3	72	79.7	78.4	158.1	177
YORKS-HUMBER	23	3,131	136	19.8	6.9	67	83.8	80.6	164.4	201
W. MIDLANDS	22	3,119	142	14.7	9.6	65	84.1	75.4	159.5	216
E. MIDLANDS	26	1,716	66	12.0	5.5	55	84.5	75.4	159.9	119
E. ANGLIA	12	648	54	7.8	6.9	44	89.7	76.6	166.3	122
S. EAST	62	4,351	70	10.8	6.5	27	79.7	76.3	156.0	262
S. WEST	40	1,846	46	11.3	4.1	54	85.3	82.2	167.5	85
TOTAL	299	25,970	87	13.8	6.3	51	82.8	78.6	161.4	171

LLMs = Local Labour Markets.

NOTE: (i) - Total population figures (1961) taken from Annual Abstract of Statistics 1971, P.12, Table 11.

The average size of a local labour market in population terms is 87,000 which seems reasonable in terms of potential Journey-to-Work movements and internal density. There are, however, widespread differences in average local labour market populations between Regions. The largest average population size is in the W. Midlands (142,000) and Yorkshire Humberside (136,000), which largely reflects the heavily industrialised and urbanised nature of these Regions.(22) By contrast, the lowest population sizes are in Wales (66,000), E. Anglia (54,000) and the E. Midlands (66,000) which, apart from the E. Midlands, tend to be less heavily industrialised and with a more dispersed population.(23)

The average acreage of the local labour markets is 13,800. In general terms this again seems a reasonable figure bearing in mind identified Journey-to-Work patterns and the need to maintain an acceptable level of internal density. Regional variations in average acreages are again fairly significant, ranging from 7,800 in E. Anglia to over 17,000 in Wales, the N. West and Yorkshire-Humberside. These variations are more difficult to reconcile than the population figures and seem to be best explained by the spatialconfigurations of the Local Authority areas rather than any general regional characteristic.(24) There is also a positive

(22) Obviously there is a distinction between regions like W. Midlands and the S. East in terms of population density and travel to work densities. In particular,whilst the lack of local labour markets in the S.E. reflects the consistent "chaining" of one local labour market onto another, this does not occur to the same extent in areas like the W. Midlands. That is, although chaining occurs the local labour market self-containment criteria are reached before the acreage constraint is violated.

(23) Without detailed analysis it is difficult to establish why the E. Midlands has a low average population, but it probably reflects particular characteristics in the configuration of the local labour markets.

(24) Not surprisingly there appears to be a positive correlation between local labour market size and average population; i.e. the large local labour markets have higher average population levels.

correlation between local labour market size and average population density which seems to suggest that larger local labour markets are associated with densely populated Urban Areas where it is difficult to restrict the scope of overlapping local labour markets.(25)

In terms of self-containment the average figure for the United Kingdom was comfortably above the 70-70 selection criterion. Moreover on a regional basis there does not appear to be any meaningful differences between areas for either self-containment index, or even for the composite self-containment figure. This is not surprising given that the key determinants of the self-containment cut-off are not likely to depend on regional characteristics.(26)

(25) The only two exceptions to the correlation between local labour market size and local labour market density are Wales with a high average acreage and low population density, and the S. East with a low average acreage and high population density. In both cases this would appear to reflect particular settlement patterns.

(26) In particular the cut-off points will depend on the spatial configuration of Local Authority areas and settlement patterns which do not vary systematically by Region.

APPENDIX 2

THE STRUCTURAL CHARACTERISTICS OF UK LOCAL LABOUR MARKETS AND THE ISOLATION OF LABOUR MARKET DOMINANCE

This appendix deals with three aspects concerning the identification of LLM industrial structure. Firstly, the employment and plant level data available at a LLM level is examined. Secondly, the alternative methods of using this data to define plant dominance are outlined with the principal objective of developing a theoretically acceptable but at the same time operational measure of this phenomenon. Finally, the results of applying the chosen definition are presented attempting where possible to highlight the key characteristics of the indentified group of dominated LLMs.(1)

1 DATA AVAILABILITY

The ideal data set for the project would be a nationally collected listing of manufacturing plants, their industrial classification, location, and employment. Two such series exist; the intermittent Census of Production and the more recently introduced Annual Census of Employment. In both cases, however, the individual returns are not available because of strict confidentiality rules, and hence the data was of little use to the dominant plant project. Three further data sets were therefore used to define and identify labour market structure and dominant plants. These data sources are described below.

---

(1) Conceptually it may appear preferable to discuss the appropriate definition of dominance before examining data sources, but given the not inconsiderable problems of data acquisition in this field data availability is considered first. That is, it would be inappropriate to suggest a definition based upon a measure where data was unavailable. The rationale behind this approach becomes clear in Section 2.2 where attempts are made to apply several different definitions.

(i) The ERI (supplements) On condition that complete confidentiality was maintained permission was granted by the Department of Employment in several regions to have access to their ERI records. In all cases this data related to 1973, the last year in which local employment offices were obliged to collect such data. Using this source, data was aquired for the largest manufacturing employers in 159 of the 301 LLMs, and for the 10 largest manufacturing employers in 74 of these 159 LLMs.

(ii) ERII Census For the remaining 142 LLMs not covered by ERI data an alternative approach was adopted. Permission was granted to analyse the ERII Census for 1973 in all Department of Employment Local Office Areas. These records list employee numbers by MLH, therefore from these records it should have been possible to identify LLMs considered to be industrially dominant. Ancillary data sources, primarily business directories, could then be used to distinguish between LLMs where such industrial dominance was the result of a single establishment. There are a number of situations, however, where such an approach encounters problems. Firstly, there are cases where, although an establishment employs a high proportion of the labour force, it produces many products and therefore the plant's workforce is classified into more than one MLH. The solution to this type of problem was to try and identify pairings of MLHs which might reflect a single, yet multi-product enterprise. Secondly, there were situations where a single MLH employed a sufficiently high proportion of the labour force, but where directory evidence suggested that more than one company was involved. Under these circumstances the data available was examined in more detail to establish whether the two companies were separate or

whether the data reflected some form of joint ownership. Rather more involved was a third type of situation where both more than one company and more than one product was involved. In these cases "Who Owns Whom" and similar publications were used to investigate possible relationships between the plants. A final type of problem was the situation where a local labour market had a high proportion of its workforce in a single MLH, or a group of related MLHs, where directory data suggested this was a result of two or more firms with no direct connections but where, when examined in more detail, there were relationships such as common directors. Under these circumstances the separate plants were not considered as a dominant plant given the absence of a formal association.

Accordingly, on the basis of the 1973 ERII data augmented by material from business directories on product, employment and corporate structure, the remaining 142 LLMs for which ERI (Supplement) data was not available were examined in an attempt to identify dominant plants.(2)

(iii) Factory Inspectorate Data Permission to consult the records maintained by the Factory Inspectorate, which includes data on company product group (but not MLH) and employment, was granted to the project. However, there were a number of problems associated with using this data. Firstly, Factory Inspectorate data is held in a large number of local offices and it is therefore difficult and time consuming to collect and analyse. A second major problem was that Factory Inspectorate data, unlike Department of Employment statistics, does not relate cross sectionally to a single point in time. Rather, data for each plant refers to the most recent record update. Finally, the Factory Inspectorate data does not cover total employment, but total employment on site, thereby omitting such workers as delivery men and sales representatives.(3)

---

(2) To test whether the two methods (ERI and ERII) were compatible, for one region (Wales) the ERII method was applied and the results subsequently checked by reference to ERI data. Of the nineteen labour markets involved, the two methods coincided in their respective distinctions between dominated and non-dominated labour markets in every case.

(3) However, to test the compatibility of the Factory Inspectorate data with ERI figures, the corresponding statistics for a number of Scottish LLMs were compared and few significant differences were found.

TABLE A2.1 LIM DATA AVAILABILITY

REGION	LIMs	ERI (SUPPLEMENT)	ERII	FACTORY INSPECTORATE
East Midlands	26	Collected. 10 Largest plants	Collected	Available
West Midlands	22	- do -	"	"
Yorks, Humberside	26	- do -	"	"
	74			
Wales	19	Collected. Largest plants	Collected	Available
Scotland	31	- do -	"	Collected (21 LIMs)
East Anglia	12	- do -	"	Available
South East (North)	23	- do -	"	"
	85			
South East (South)	39	Unavailable	Collected	Available
North	27	"	"	"
North West	36	"	"	"
South West	40	"	"	"
	142			
Total	301			

Note: (i) In several other sections the total number of LIMs is given as 299 not 301. This inconsistency reflects the problems which arose when two LIMs had to be discarded due to Local Authority reorganisation.

(iv) Miscellaneous Data Sources In a number of cases the principal data sources were supported by supplementary directory data, personal knowledge as to the identity and importance of specific companies or plants, and ancillary sources such as newspaper reports. Data availability referred to 1973 in most cases.

To sum up the major points emerging from the discussion on data availability it would appear that there are a variety of LLM data sources available to the project to help select dominant plants (see Table A2.1). However, in all cases the data bases are limited, both in the extent to which they can be used to identify a LLM plant hierarchy and in terms of the quality and reliability of the figures. Nonetheless taking account of the different data sources, and the qualifications associated with each, it is still possible to build a sufficiently comprehensive picture of LLM structure and thereby identify plant dominated LLMs. The actual definition or measurement of dominance should, however, reflect data availability. Accordingly the limitations on the available sources will constrain the complexity of the measure adopted. The possible approaches to this problem are discussed in the following section.

2 ALTERNATIVE METHODS OF DEFINING DOMINANCE

The definition of plant dominance may be viewed as either a statistical or behavioural phenomenon.(4) Whilst the project, given this distinction, is interested in behavioural phenomena, data is only available in relation to statistical estimates of LLM concentration. Accordingly, dominance initially has to be statistically defined. However, on the basis of this definition the fundamental objective of the analysis is to subsequently identify the behavioural characteristics associated with the statistically defined estimate of dominance.

---

(4) Indeed Bunting (1962) draws the distinction between concentration as a purely statistical characteristic in which a few employers hire a large percentage of the market, and monopsony or oligopsony which is defined as a behavioural characteristic.

Concentrating on statistical estimates there are two broad approaches to the definition of dominance: firstly, a relatively simple method where LLMs above a threshold concentration level are classed as dominated; and secondly, to set up some "normal" distribution of plant sizes from which a distinctive "dominated" distribution of plant sizes may be distinguished. Operationally the most important distinction between these two approaches lies in their data requirements. The former requires only the size of the largest manufacturing employer in the LLM, whilst the latter requires a complete size distribution for all, or at least the larger, plants. The features associated with each approach are discussed below although it should be remembered that data on the plant size distribution for all LLMs is not available. Nevertheless, the alternative more involved definitions are analysed on the more limited data base to establish whether there is any evidence of a normal and a dominated distribution. This discussion also serves to indicate that the more sophisticated measures also suffer from problems which would be difficult to overcome even if a more complete data set was available.

2.1 The Threshold Approach

The threshold approach to defining dominance has a number of advantages, particularly from an operational standpoint. Indeed, given the statistical inadequacies of the available data sets, it is the only readily applicable indicator of plant dominance. The simplicity of the measure also means that it is easy to apply, and not subject to the same degree of ambiguity normally associated with the more sophisticated indices (see below).

Nonetheless, the apparent simplicity of using a single percentage value as the definition of a dominant plant conceals a number of difficulties. One major problem involves adequately defining a manufacturing plant. At the simplest level a plant may be thought of as a single factory but there are a number of more complicated situations which serve to confuse this definition. In particular there are examples of multiplant companies within a LLM.

For the purposes of the research all commonly owned plants within a LIM are treated as a single establishment.(5) Another similar problem associated with the threshold approach, and one which is more difficult to identify and resolve, concerns plants related through a common holding company. Where such plants manufacture similar or related products they are treated as though they were a single plant.

The remaining problems with the threshold approach relate to the definition of total LIM employment which forms the basis of the dominance calculation. Three definitions are theoretically feasible: the total workforce in the LIM; the workforce in the LIM engaged in non tertiary activity; and the economic base of the LIM as defined in terms of the standard basic non-basic ratio. The basic non-basic ratio was not considered as considerable doubts have now been cast upon the export-led urban growth concept which forms the basis of economic base theories (see Bumenfeld, 1957). Even if this were not so, the calculation of the numbers employed in basic employment for each LIM would still raise considerable conceptual and statistical difficulties. Using the tertiary labour force as a definition of LIM employment also raises a number of problems, particularly in LIMs where the employment structure is dominated by service activities and therefore any dominant plant identified on this basis need only employ a low proportion of total employment.(6) Accordingly, and partly by default, the total workforce in the LIM was selected as the most representative and appropriate measure of LIM employment.

---

(5) Given the form of ERl (Supplement) data it is not always possible to distinguish between single and multiplant enterprises within a LIM, although this is possible from Factory Inspectorate data.

(6) For example, the St Andrews LIM has a total workforce of 3,900 of whom 2,800 are in service occuptions. Thus the largest manufacturing employer with a workforce of approximately 450 might be considered as dominant if the non-tertiary labour force were used as a base. This would clearly be unrealistic given the employment structure of the remainder of the LIM.

Bearing in mind the problems associated with the threshold approach the next step in identifying dominant plants using such a technique involved deciding on an appropriate cut-off value. The proportion of the total labour force employed in the largest manufacturing establishment was therefore calculated for the 159 LLMs where ERI (Supplement) data was available. The results of this exercise showed that these values trace out a skewed distribution curve. The mean value of dominant plant is 12.3% and, reflecting the skew in the distribution, the median value is 9.4% with an interquartile range of 5.1% to 15.8%. Over the entire range the extreme values are found in Leeds, where the largest plant employs exactly 1% of the total workforce, and Coalville, where the largest plant employs 66.6% of the total workforce. However, in analysing the figures there does not appear to be a natural break in the distribution. As a result it is necessary to select a cut-off value on a pragmatic basis when trying to distinguish between dominated and non-dominated LLMs. The primary requirement in this exercise is to ensure that in setting the cut-off value a sufficient number of dominated LLMs are included to enable the latter stages of the analysis to be performed upon a reasonably large sample. On the assumption that the 159 LLMs are typical of the population of 301 with respect to employment concentration Table A2.2 indicates the number of dominated LLMs defined by a range of cut-off values. From these figures it would seem that a value within the range 12.5% - 15.0% generates a sufficient number of dominated LLMs (that is, about 100) for detailed study. Accordingly, any manufacturing plant employing over 12.5% of the total LLM workforce was defined as being dominant.(7)

(7) The 12.5% cut-off also reflects the assumption that in any subsequent questionnaire analysis only a limited proportion of plants are likely to respond.

TABLE A2.2 THE EXTENT OF DOMINANCE BY CONCENTRATION

CONCENTRATION CUT-OFF VALUE	NO OF DOMINATED LIMs	NO OF NON-DOMINATED LIMs
5.0	229	72
7.5	180	121
10.0	141	160
12.5	116	185
15.0	88	213
17.5	61	240
20.0	45	256
22.5	33	268
25.0	29	272

Source: W F Lever (1977)

2.2 A Size Distribution Typology

Although operational considerations dictate that a threshold value approach should be adopted as a means of defining plant dominance it is also possible to examine whether, by applying more sophisticated measures to the LIMs where data on the plant size hierarchy was more complete, it is possible to produce a more precise and more appropriate dominance cut-off point.(8) In general the alternative and more complex approach to defining dominated LIMs relies on identifying some plant size distribution which may be regarded in some sense as "normal" and thus subsequently isolating a group of LIMs whose size distribution differs significantly from this in respect of the largest plant in the size distribution. Four approaches to the size distribution typology are possible using four separate but related measures of distribution. These are: the Rank Size Rule; Weavers Statistic; Lorentz Curves and Concentration

(8) For this purpose the data available is as shown in Table A2.1 and 15; 74 LIMs for which the ten largest plants are listed from the ERI (Supplements); and 21 Scottish LIMs for which a complete size-distribution is available from the Factory Inspectorate records.

Ratios; and Gini coefficiants, (for more details on the nature of each statistic see Lever(1977)).

For each of these statistics attempts were made to identify a normal distribution and subsequently a dominated distribution. In each case, however, there were several major drawbacks associated with the statistics from both a theoretical and practical viewpoint. The major problem was that in the resultant plant size distributions no clear break-point was apparent between the normal and dominated group. Rather, the data suggested that the plant size distrubutions were continuous and to distinguish between the two groups would again involve introducing an arbitrary cut-off point and not a natural break.

A second problem, and related specifically to the rank-size statistics, concerned the role of the service sector in the rank-size measures. The overall size of the service sector has to be taken into account to ensure that LLMs with a high proportion of employment in service occupations are unlikely to be dominated by a small manufacturing plant.(9) (10) However, as there is no size breakdown of service sector establishments considerable problems arise in the treatment of the service sector. In particular, if the service sector is considered as a single entity in many cases it tends to swamp the largest single manufacturing concern. Although some modifications to the calculations may be made to overcome this problem there is no generally applicable solution.

A final shortcoming of the various rank-size statistics relates to the widespread requirement to index plants to control for LLM size and thereby facilitate direct comparison between LLMs and the normal distribution. However, by reducing the largest plant to an index number the absolute size effect is concealed. Hence there

---

(9) For example, St Andrews where the University dominates the LLM.

(10) Similarly, in cases where there is only data for the 10 plants there is also the problem that although a single plant may appear dominant if there is a long tail of relatively small establishments this will no longer be true.

is no measure of how important the plant is within the LLM as a whole, merely how important it is relative to the next largest plant. There is no solution to this problem, since either the rank-size curve is based on an index number which does not relate to the total size of the labour force, or else the absolute value of the relative proportions employed in the largest plants are used and mathematical comparisions between individual curves and the "normal" distribution become ambigious.

Other relatively minor shortcomings are also associated with the various individual statistics. For these reasons, plus the more general failings, it became obvious that there was no meaningful alternative to the threshold approach. Accordingly the 12.5% cut off value defining dominance was retained.

3 DOMINATED LLMs: OVERALL CHARACTERISTICS

On the basis of the 12.5% cut off definition it was possible to identify 95 dominated LLMs (see Appendix 6). Of these, three (Crewe, Fraserburgh and Llanelli) have two plants which each employ more than 12.5% of the labour force; therefore, in total there are 98 dominant plants. These 98 plants employ approximately 570,000 workers. Six of the plants employ just below 1000 workers with the largest employing almost 25,000. The average plant size is a little under 6,000.

Table A2.3 shows the distribution of dominance values for the 98 plants. The highest single dominance value is 66.57% and the median value is 19.28%. Table A2.4 reveals that dominant plants cover a wide range of industrial groups even although one-third of the plants are engaged in coalmining and vehicle manufacture . The only major industrial orders unrepresented are instrument engineering and the manufacture of leather goods. On the other hand it is not surprising that industries which enjoy considerable scale economies such as shipbuilding and vehicles are overrepresented amongst the 98 plants. In terms of the spatial distribution of the 95 dominated LLMs, Table A2.5 indicates that they are more common in the depressed Development Area regions than in the Intermediate Areas, and more common in the Intermediate Regions than the

TABLE A2.3: THE PROPORTIONAL SIZE DISTRIBUTION OF DOMINANT PLANTS

EXTENT OF DOMINANCE	NUMBER OF PLANTS
12.5 - 14.99	19
15.0 - 17.49	21
17.5 - 19.99	12
20.0 - 24.99	13
25.0 - 29.99	9
30.0 - 34.99	6
35.0 - 39.99	4
40.0 - 44.99	6
45.0 - 49.99	1
50.0 -	5
Total	96

TABLE A2.4 THE INDUSTRIAL BREAKDOWN OF DOMINANT PLANTS

SIC	INDUSTRY	NO	SIC	INDUSTRY	NO
II	Mining	18	XI	Vehicles	19
III	Food	7	XII	Other Metal Goods	2
IV	Petroleum Products	1	XIII	Textiles	2
V	Chemicals	5	XIV	Leather	0
VI	Metal Mfg.	10	XV	Clothing	3
VII	Mech. Eng.	9	XVI	Bricks Etc	2
VIII	Instrument Eng.	0	XVII	Timber	1
IX	Electrical Eng.	11	XVIII	Paper	3
X	Shipbuilding	4	XIX	Other Mfg	1

prosperous regions. It would be premature, however, to suggest that the frequency with which labour markets are dominated helps explain the level of economic well being in interregional comparisions. It seems more likely that industrial structure forms an intervening variable so that, for example, depressed regions are more dependent upon declining industries such as coalmining, shipbuilding and metal working for employment and these are the industries in which dominant plants are most commonly engaged.

TABLE A2.5 THE REGIONAL BREAKDOWN OF DOMINANT PLANTS

REGION	NO OF LLMS	NO OF DOMINATED LLMs	% OF TOTAL
E. Midlands	26	13	50
Scotland	31	14	45
Wales	19	9	42
Northern	27	10	37
South West	40	12	30
Yorks, Humberside	26	7	27
W. Midlands	22	6	27
N. West	36	10	25
E. Anglia	12	3	25
South East	62	11	18
Total	301	95	32

Finally, since it may be interesting at a later stage to compare the performance of those LLMs which are dominated by a single plant with LLMs where a single industry, but not plant, is dominant it is also worthwhile identifying such areas. As Table A2.6 shows from the ERII lists it is possible to identify 34 LLMs in which one industry, here defined as a single Minimum List Heading

(MLH) in the 1968 classification, employs more than 12.5% of the total labour force, and in which no one plant is dominant. Two related features of the table are worthy of some comment. The first point is that the industry dominated LLMs are to a large extent different from those characterising the plant dominated areas. In particular, the industries where economies of scale are of obvious importance tend not to be so well represented in the industry dominated LLMs. Secondly, the industry dominated LLMs cover a relatively wider range of industries than the plant dominated case, and related to this they do not appear to be concentrated in one or two sections, although possible exceptions to this are woollens and footwear.

TABLE A2.6 INDUSTRY-DOMINATED LABOUR MARKETS

Minimum List Heading	Labour Industry	No Of Markets
214	Meat and fish products	1
218	Fruit and vegetable products	1
271	General chemicals	2
311	Iron and steel	1
332	Machine tools	1
335	Textile machinery	1
339	Miscellaneous machinery	1
370	Shipbuilding	2
373	Aerospace equipment	2
399	Miscellaneous metal industries	2
413	Cotton weaving	2
414	Woollen and worsted	5
415	Jute	1
417	Hosiery	2
450	Footwear	5
462	Pottery	1
469	Building materials	1
472	Furniture	1
481	Paper and board	2
Total		34

APPENDIX 3

THE IMPACT OF DOMINANCE ON PLANT PERSONNEL POLICY : DATA COLLECTION

1 UNDERLYING CONSIDERATIONS

The ideal data set for researching the impact of dominance on labour market behaviour would be an extensive plant level data bank covering relevant labour market variables and other factors influencing establishment personnel policy. In addition, to generate meaningful control groups, this information would also have to be available for a sample of otherwise similar non-dominant plants operating in more competitive LLM conditions, and a sufficiently large number of smaller plants operating within a dominated LLM. Not suprisingly such disaggregated data does not exist in an accessible and suitably structured form. Consequently, to test the hypotheses developed in the main body of the text involves building an establishment based data set focusing exclusively on plant labour market policies.

Considering the detailed and highly specific nature of the data requirements, and the lack of a meaningful alternative source of information, the only feasible method of gathering sufficient in-depth information is by devising a suitably structured postal questionnaire.[1] In terms of the research this form of data collection has a number of significant advantages, none more so than enabling the researcher to formulate questions and prompt both quantitative and qualitative answers to a specific hypothesis related to detailed aspects of plant behaviour and labour market strategy. Therefore, the questionnaire approach partly avoids the dangers often associated with more general data sets which are liable to miss important details and lack sufficiently comprehensive coverage. Another equally important advantage of a questionnaire approach is the considerable flexibility it allows in selecting a target group of plants and a sufficiently well-specified control group.[2]

(1) Other approaches to the data problem, were also considered but were not thought to be practical. Nonetheless where possible questionnaire material will be suplemented by additional information collected from other sources

(2)The Questionnaire approach also suffers from known drawbacks and

Accepting that the questionnaire approach is the most appropriate way of collecting the data a proforma was devised by directly addressing the theoretical issues identified in Chapter 2 and subsequently developing questions designed to highlight the impact of dominance on plant personnel policy. As a result the questionnaire included sections on : the establishment's general background; labour supply and labour shortages; dominant plant wages and earnings; dominant plant recruitment policies; plant level unionisation; training policies; plant turnover and quit rates; and the extent of fringe benefits offered in the plant (a copy of the final questionnaire is attached to the backcover of the thesis). Within each section questions were asked on the labour market environment faced by the firm and its implications for plant manpower policies. Allied to this, questions were also asked about how dominant plants adjust to changes in the LLM environment in terms of their approach to personnel policy. Where appropriate the questions were designed to distinguish between the main skill groups employed in the plant.(3)

In designing the questionnaire, care was taken to ensure that responding involved the minimum of effort despite the range of issues covered. Therefore, questions which were considered to involve time consuming data collection were avoided in favour of more impressionistic and occassionally qualitative responses. (4) Where possible, and to avoid confusion, the questions were framed in accordance with definitions and terms commonly used by personnel departments. Similarly, and to further reduce the demands on respondents, the questions were also designed to correspond closely with government and other similar requests for manpower and labour market information. Finally/.....

(3) Specifically the questionnaire sought separate responses on each aspect of personnel policy for skilled male manuals , other male manuals and female manuals. This approach was adopted since on the basis of previous research these categories were considered to be the principal work groups within the plant that employers would tend to adopt different attitudes towards.

(4) This unavoidably introduces a degree of inaccuracy and subjectivity into the analysis which may influence the final results. Nonetheless, in terms of a direct trade-off against a satisfactory response rate there is little choice since either subjective evidence and opinions are accepted or the response rate falls sharply.

Finally, in drafting the questionnaire the questions were carefully and objectively constructed to avoid subsequently biased responses. In particular, where sections were perceived to be difficult to interpret the questionnaire was annotated to guide respondents. [5]

When the draft questionnaire was completed it was piloted on a sample of large plants operating in West Central Scotland. [6] The response to the pilot exercise confirmed that dominance did seem to influence personnel policy , and that the questionnaire appeared to cover the principal elements of manpower policy influenced by monopsonistic pressures. Nonetheless several changes suggested by the participants were incorporated into the final questionnaire. For example, on the advice of the pilot group personnel managers several of the more sensitive topics potentially associated with dominance were excluded from the final version of the document. In particular, this applied to attempts to identify the characteristics and determinants of industrial relations within dominant plants. In this case it was felt by the pilot managers that detailed questioning on the sensitive issue of industrial relations may be misconstrued , and as a result this would reduce the response rate considerably. [7] Furthermore, on the basis of feedback from the pilot exercise, it was decided to shorten several of the more quantitative sections, and for other topics switch to a more impressionistic line of questioning [8] The pilot/.........

---

(5) In constructing the questionnaire other related research reports were consulted to provide a suitable framework and to avoid possible ambiguities.

(6) A list of participants is presented in Appendix 10. Although the establishments selected for the pilot were not dominant they were large local manufacturers employing a sizeable proportion of the area's labour force. Consequently, the plants were familiar with many of the possible characteristics associated with dominance.

(7) Fortunately the sensitive issues omitted from the questionnaire were only of marginal significance to the research and therefore the overall analysis of dominant plant personnel policy was not significantly impaired.

(8) Besides simplifying the questionnaire, this approach may also provide more meaningful results by avoiding the possible spurious accuracy suggested by quantitative estimates.

The pilot plant managers especially considered that it would be unrealistic to quantitatively analyse recruitment methods, screening techniques, training methods, and labour shortages. That is, if a qualitative approach was not adopted it was felt that it would be difficult for the respondents to compile accurate and meaningful responses quickly.

Although questionnairing dominant plants is the only practical means of gathering data on plant personnel policy this approach remains subject to a number of drawbacks which should be explicitly recognised as they may result in interpretative difficulties when analysing the responses. One major drawback already mentioned is that the type of question which may be reasonably asked is restricted. Respondents will tend to ignore confidential and sensitive issues or, and potentially more problematic, will record inaccurate and misleading replies.(9) This shortcoming may be serious as it is difficult to verify the quality and validity of questionnaire responses. Consequently, the figures submitted by the respondents generally have to be accepted as an accurate statement of plant personnel policy and labour market behaviour.

Another drawback to questionnairing relates to the institutional constraints imposed on dominant plant behaviour as this also tends to restrict the scope of the research. For example, the imposition of incomes policy during the period under study effectively contraints attempts to establish how dominant plant wage policies relate to the LLM and changes in the LLM environment. Indirectly this problem may also influence the behaviour of other aspects of labour market behaviour such as plant training and recruitment policies.

At a more general level another shortcoming associated with questionnaire analysis is that it does not solve the problem of determining causality from the responses and thereby the principal

---

(9) Where potentially sensitive features remain in the schedule care was taken to explain the purpose of the question, An assurance was also given that the information collected would be treated as confidential with the results of the study only being published in aggregate.

factors actually influencing dominant plant personnel policy.[10] As emphasised in the theoretical and empirical chapters many aspects of dominant plant personnel policy are interdependent and similar personnel policies may develop in response to different stimulii.[11] Accordingly, whilst the questionnaire analysis will provide a sufficiently comprehensive statistical base to confirm or refute previously developed hypotheses it will not be possible to accurately or unambigiously establish the importance of particular personnel policy variables. [12] Instead, therefore, the analysis of the questionnaire concentrates on identifying the overall characteristics of monopsony rather than the employers response to individual factors or stimuli .

2 THE DOMINANT PLANT RESPONDENTS

The finalised questionnaire was sent to each of the dominant plants identified in Appendix 6 along with a covering letter summarising the objectives of the survey. [13] Considering the length and complexity of the questionnaire the repsonse rate was high, with 41 out of a possible 96 plants replying. Of the 41

---

(10) Of course the same shortcoming, except perhaps at an even more acute level, exists with other approaches.

(11) The inability to determine the principal independent variables may be further compounded by two additional factors. Firstly, as the dominant plant personnel policy system is prone to multicolinearity it is not possible to sequentially identify the effect of a change in one variable on others. Secondly, there is no theoretical reason to suggest that one model embraces the behaviour of all dominant plants . That is, the nature of the dependent and independent variables may change depending on the plant under investigation.

(12) This is not always strictly true since some sections of the questionnaire indicate fairly accurately the nature of the principal determinants of personnel policy .

(13) Where appropriate, and to speed up the data collection, reminders were sent to dominant plants not replying to the original request. In turn these were followed up by contacting the dominant plants directly.

returns 4 were excluded from the subsequent analysis: two because the plant's employment fell below the stipulated employee size threshold of 1000 employees, and 2 because they were smaller branches of firms already operating within the LLM. (14) The remaining 37 plants, constituting an overall response rate of 40%, are listed and in Appendix 9 .

In general the questionnaire returns appear to reflect the characteristics of the parent population, and therefore constitute a sufficiently accurate starting point for identifying the effect of monopsony on dominant plants. The regional distribution of the returns is presented in Table A3.1 and indicates no significant spatial differences in the structure of replies between the dominant plant population and the respondent sample. A similar pattern is repeated with respect to the distribution of responses in terms of ownership (Table A3.2) and industry (Table A3.3). In both/.......

TABLE A3.1 THE REGIONAL BREAKDOWN OF THE DOMINANT PLANTS' POPULATION AND THE QUESTIONNAIRE RESPONDENTS

REGION	DOMINANT PLANT POPULATION		QUESTIONNAIRE RETURNS	
	NUMBER	PERCENT	NUMBER	PERCENT
Scotland	15	15.6	5	13.5
Wales	10	10.4	4	10.8
Northern	9	9.4	2	5.4
North West	10	10.4	3	8.1
Yorkshire	7	7.3	3	8.1
West Midlands	14	14.6	4	10.8
East Midlands	5	5.2	5	13.5
East Anglia	3	3.1	2	5.4
South East	11	11.5	5	13.5
South West	12	12.5	4	10.8
TOTAL	96	100	37	100

(14) The plants considered to be too small were Crosse & Blackwell in Peterhead and Cadbury Schwepps in Montrose. The double dominating firms were British Leyland at Cowley and ICI in Ardrossan.

In both cases the structure of the responses reflects the characteristics of the parent population. [15] Again, therefore, the results of the questionnaire analysis should reflect the particular personnel methods and manpower strategies favoured by the dominant plant population.

TABLE A3 2 THE OWNERSHIP BREAKDOWN FOR THE DOMINANT PLANT POPULATION AND THE QUESTIONNAIRE RESPONDENTS

OWNERSHIP	DOMINANT PLANT POPULATION		QUESTIONNAIRE RETURNS	
	NUMBER	PERCENT	NUMBER	PERCENT
Nationalised	27	28.1	10	27.0
State Owned	9	9.4	5	13.5
Foreign	10	10.4	5	13.5
UK Private	50	52.1	17	45.9
TOTAL	96	100	37	100

(15) One bias in the industrial structure of the respondents is the high proportion of vehicle manufacturers . However, the limited extent of the bias it is unlikely to lead to any major differences when analysing the returns.

TABLE A3.3 INDUSTRY BREAKDOWN FOR THE DOMINANT PLANT POLPULATION AND QUESTIONNAIRE RESPONDENTS

	DOMINANT PLANT POPULATION		QUESTIONNAIRE RETURNS	
SECTOR	NUMBER	PERCENT	NUMBER	PERCENT
Coalmining	16	16.6	3	8.1
Food & Drink	8	8.3	3	8.1
Mineral Oil Refining	-	-	-	-
Chemicals & Plastics	5	5.2	3	8.1
Iron & Steel	12	12.5	6	16.2
Mechanical Eng	9	9.4	4	10.8
Electronics & Elect. Eng	10	10.4	3	8.1
Shipbuilding	4	4.2	1	2.7
Automative & Aerospace	19	19.8	11	29.7
Metal Inds	2	2.1	-	2.7
Textiles	1	1.0	-	2.7
Footwear	3	3.1	-	-
Timber	2	2.1	-	-
Glass Pottery & Bricks	1	1.0	-	-
Paper & Board	2	2.1	1	2.7
Rubber	2	2.1	1	2.7
TOTAL	96	100	37	100

One potential problem with the dominant plant returns was that the level of employment in the plants often fell below the pre-determined dominance threshold of 12.5% of total LLM employment. This failure to meet the cut-off value affected 12 out of the 37 respondents, and although in some instances the differences were marginal in others the changes were quite significant. The extent of the change in each of the plant's level of dominance is shown in the final colum of Appendix 9. (16)

Although the decline in employment is in some cases significant this does not imply that these establishments should be regarded as non-dominant, and therefore inappropriate for consideration in the empirical analysis. That is, a decline in plant employment does not necessarily imply that the establishment no longer employs a sufficiently high proportion of the manufacturing employment in the LLM. In particular, the decline in dominant plant employment may have been paralleled by a similar decline in LLM working population, thereby maintaining the plant's quasi-monoponistic position. Indeed this is likely to have happened following the short and continuous rise in unemployment over the past decade. (17) Unfortunately, as there are no up-to-date unemployment figures available on a LLM basis, it is not possible to establish whether this has been the case. Nevertheless, and although it is unlikely, even if there has been no parallel reduction in overall LLM employment, <u>manufacturing</u> jobs in the LLM will probably have declined in line with the general trend in the economy (see Bacon & Eltis, 1976). Again, therefore, a decline in dominant plant employment need not adversely affect the establishment's preeminant position in relation to other LLM manufacturers.

---

(16) This trend adds to the argument that the research should distinguish between high and low dominance sub-groups

(17) For example, between 1970 and 1978 (when the questionnaires where returned) unemployment in Great Britain rose from 577,000 to 1,410,000; an increase of over 100% (figures based on the <u>Annual Abstract of Statistics</u>, P160, Table 69)

The extent of more recent changes in dominant plant employment gathered from the questionnaire responses is summarised in Table A3.4. The figures show that between 1976 and 1978 the majority of plants increased employment. In some cases the increase was significant with, for example, 21% of responding firms growing by more than 10%. Of the plants experiencing a decline in employment 85% of these establishments did so marginally. These figures suggest that any long run decline in employment has stabilised and therefore these plants are likely to remain dominant.

TABLE A3.4 THE PERCENTAGE CHANGE IN DOMINANT PLANT EMPLOYMENT 1976 - 1978

PERCENTAGES CHANGE	FREQUENCY (percentage)
Above 10% increase	21
0 - 10% increase	15
0 - 5% increase	26
0 - 5% decrease	32
6 - 10% decrease	3
Above 10% decrease	3
Total number of observations	34 (100)

The skill structure of the questionnaire respondents is an additional aspect of plant employment structure which should be considered as its composition may also influence personnel policy. Table A3.5 breaks down plant employment by skill. The results indicate that there is a wide variation between plants in the proportion of skilled workers in the sample. In almost half the sample the proportion of skilled workers to manuals was below 20%. Six of the plants employed between 20% and 40% as skilled workers, and eight of the plants employed between 40% and 60%. In the remaining four plants between 60% and 80% of the workforce were skilled. The variation in the proportion of skilled workers employed by the plants will tend to influence the emphasis employers place on the different skill groups in their approach to personnel policy. However, despite this it remains unlikely that the observed variation in the importance of individual skill groups will significantly alter the underlying attitude of employers to the skill groups identified in the questionnaire. Irrespective/..........

TABLE A3.5 SKILLED WORKERS AS A PROPORTION OF MANUALS

	PERCENTAGE OF RESPONDENTS	
PERCENTAGE	DOMINANT PLANTS	CONTROL GROUP
0 - 20%	44	45
21 - 40%	19	14
41 - 60%	25	23
61 - 80%	12	18
81 - 100%	0.2	0.0
No of observations	32 (100)	22 (100)

Irrespective of the number or proportion of workers in a skill group plant management will tend to adopt a characteristic attitude towards each category which will depend more on the nature of their skill rather than their relative significance within the plant.

Another characteristic of the dominant plant sample which may influence personnel strategy is the length of time the establishment has been located in the area. Table A3.6 analyses the date of establishment in the LLM for the questionnaire respondants. The data shows that all the plants, bar one, have been located in the LLM for a considerable time. As a result the vast majority of firms will have developed well established personnel policies reflecting management's knowledge and experience in the area and the possible contraints imposed by LLM dominance. Accordingly, when analysing the questionnaire responses it should not be necessary to take into account the time plants have been operating in the area.

3 THE INTER-LLM CONTROL GROUP : LARGE PLANTS OPERATING IN A MORE COMPETITIVE LLM

To effectively isolate the impact of dominance on plant personnel policy involves creating a control group of otherwise similar but non-dominant establishments. Unfortunately creating an acceptable control group is an exercise characterised by significant difficulties.

One fundamental stumbling block relates to the theoretical problem of adequately isolating the effect of monopsony on a completely standardised basis since in trying to create an adequate control group not only does the structure of the LLM alter but so too must the size of the LLM. That is, in attempting to create a compatible control group by selecting establishments of a similar size operating in a competitive LLM two, rather than one, labour market parameters must change. Under these unavoidable conditions it may not be possible to accurately distinguish between the effects of monopsony from LLM size when examining dominant plant personnel policy. (18)

---

(18) Not all aspects of personnel policy are subject to LLM size effects. Therefore when testing some hypotheses this problem presents little difficulty. Where LLM size may be expected to have an impact attempts will be made to distinguish them from monopsony.

TABLE A3.6 DISTRIBUTION OF THE DATE OF DOMINANT PLANT LOCATION IN THE LLM

DATE	DOMINANT PLANTS (%)	CONTROL GROUP (%)
Pre 1900	27.3	36.4
1900 - 1929	21.2	22.7
1930 - 1969	48.5	40.9
1970 onwards	3.0	0.0
TOTAL	100	100

A similar control problem faced by the research was that the theoretical predictions associated with wage and employment levels in a monopsonistic LLM draw a direct comparison with what labour market equilibrium would have been in the same area were it characterised by perfectly competitive conditions. However, empirically this form of comparison is not possible. Therefore, and as proxy, Dominant Plant behaviour has to be compared with a control group operating in separate but broadly comparable LLMs. In adopting this approach it is assumed that the structure of the control LLMs' labour supply curves are broadly compatible with the dominated LLM supply curves. Moreover, of equal importance the level of labour demand within the control group markets are similar to the level prevailing in the dominated LLMs. If either of the aspects differ significantly then, in certain cases, observed differences between the samples cannot be unambiguously attributed to the impact of monopsony.

Bearing in mind the theoretical and operational problems associated with defining a satisfactory comparitive sample the control group was developed almost exclusively on a pragmatic basis. This involved circulating the dominant plant personnel policy questionnaire to over 250 major establishments operating in large urban areas where they only employed a relatively small proportion of the local workforce. [19] The plants were selected using trade directories and other similar methods, whilst at the same time considering the characteristics of the dominant plant population. [20]

The reponse rate in the control group exercise was substantially lower than the dominant plant survey with only 30 replies from the original 273 questionnaire sent out. To some extent this was to be expected since the structure of the questionnaire was geared towards identifying the characteristics of dominance. Therefore, the questions may not have been of particular relevance to the control group. This largely unavoidable shortcoming was often compounded by data problems resulting from either inaccurate or outdated information in the trade directories.

TABLE A3.7 THE REGIONAL BREAKDOWN OF CONTROL GROUP RESPONSES

REGION	NUMBER	PERCENTAGE
Scotland	3	12.5
Wales	-	-
Northern	-	-
North West	2	8.3
Yorkshire Humberside	2	8.3
West Midlands	5	20.8
East Midlands	5	20.8
East Anglia	2	8.3
South East	5	20.8
South West	-	-
TOTAL	24	100

(19) A complete list of the 273 firms involved in the exercise is presented in Appendix 10.

(20) For example, attempts were made to match the industrial spread of the dominant plant population by questionnairing mining and steel plants, both of which were commonly associated with dominance.

In particular, on many occasions it transpired that plants had either closed or changed their address, and therefore many questionnaires did not reach the targeted establishments.

Of the 30 replies 6 were rejected, largely on the grounds that over the last few years the establishments had either considerably reduced their workforce or the trade directory used referred to company, and not plant, employment. In both instances this meant that total employment fell well below the 1000 worker size threshold. In total, therefore, for the control group there were only 24 replies of sufficient quality resulting in an overall response rate of 9%.(21)

Despite the disappointing number of replies the sample of responding firms, with several qualifications, still appears to constitute an adequate control group. For example Table A3.7 and Table A3.8 show that, like the dominant plant replies, the responses cover a broad range of regions and industries. However, there are differences within the common spread which should be taken into account before comparing the data generated by the two samples. In particular it does seem that geographically the control group is underrepresented in Wales, Northern Region, and the South West and overrepresented in the West Midlands and the South East. That is, the control group plants appear to be concentrated in the more prosperous areas. Similarly, but on an industrial basis, it seems that the control group are particularly underrepresented in coalmining, iron and steel and to a lesser extent in mineral oil refining, shipbuilding and automotives. The control group sample is overrepresented in mechanical engineering and electronics. Once again, therefore, the control group appears to be concentrated in the more bouyant sectors of the economy. Both of these results will have implications for the empirical isolation of monopsonistic influences on dominant plant behaviour.

(21) This slow response rate occured despite strenuous follow-up efforts including telephone contacts and sending reminder questionnaires.

TABLE A3.8 THE INDUSTRIAL BREAKDOWN OF CONTROL GROUP RESPONSES

SECTOR	NUMBER	PERCENTAGE
Coalmining	-	-
Food & Drink	3	12.6
Mineral Oil Refining	-	-
Chemicals & Plastics	1	4.2
Iron & Steel	2	8.4
Mechanical Eng	6	25.0
Electronics & Electric Eng.	5	20.8
Shipbuilding	-	-
Automotive & Aero	2	8.4
Metal Industries	1	4.2
Textiles	-	-
Footwear	1	4.2
Timber	1	4.2
Glass Pottery & Bricks	-	-
Paper & Board	1	4.2
Rubber	1	4.2
TOTAL	24	100

On the basis of the regional and industrial variations between the dominant plant and the control group samples it would seem realistic to suggest that this would also be reflected in differences between demand levels and unemployment rates between the two groups of LLM. Whether or not the view can be supported is examined in Table A3.9 which compares the level of unemployment in the dominant plant and control group areas. Note, however, that it is not strictly possible to measure the level of unemployment in the control group areas as they do not form part of any well defined LLM. Therefore, in the table regional unemployment rates are used as a proxy. The unemployment rates for the dominant plants and the regions are estimated for the period 1971-1975 since the questionnaire often refers to previous as well as current policies. The figures in the table show, quite suprisingly, that the overall UK unemployment rate between 1971 and 1975 was higher than the equivalent rate for the dominant plant questionnaire respondents. Similarly, on a regional basis the table also shows that in all but two of the regions the unemployment rate is lower for LLMs where the dominant plants responded to the questionnaire. This picture is supported by the column showing the unemployment rates for the non-dominated LLMs, where once again the average unemployment rate is higher than the average dominated rate. Similarly, in all but two regions, the average level of unemployment in the dominant plant LLMs responding to the questionnaire is lower than the non-dominated group.[22] Once again these results will have implications for the way in which the questionnaire data is analysed. In particular the figures appear to contrast with the earlier evidence which suggested that demand levels were higher in the control group sample. That is, it will be difficult to decide whether demand levels are materially different between the two samples and, therefore, how best to control for this potentially important variable. Fortunately/........

---

(22) Note that the only group with generally a lower unemployment rate than the plant dominated LLMs is the industrially dominated group. Note also the unemployment rate for the total dominant plant sample in higher than the figure for the questionnaire respondents. That is, the respondents appear to be an above average sample with respect to level of LLM unemployment.

TABLE A3.9 A COMPARISON OF REGIONAL UNEMPLOYMENT WITH DOMINANT PLANT UNEMPLOYMENT

1971 - 1975

REGION	ESTIMATED AVERAGE REGIONAL UNEMPLOYMENT	UNEMPLOYMENT IN DOMINANT PLANT QUESTIONNAIRE RESPONDENT LLMs	UNEMPLOYMENT IN ALL PLANT DOMINATED LLMs 1971 - 1975	UNEMPLOYMENT IN INDUSTRIALLY DOMINATED LLMs 1971 - 1975	UNEMPLOYMENT IN NON DOMINATED LLMs 1971 - 1975
Scotland	6.3	7.1	5.8	4.4	6.6
Wales	6.2	5.4	5.9	-	7.2
Northern	6.7	5.2	6.6	3.0	7.6
North West	5.5	3.9	3.8	4.3	5.6
Yorkshire Humberside	4.8	4.2	6.1	4.5	5.4
West Midlands	5.2	2.8	3.7	4.6	3.8
East Midlands	3.9	3.5	3.4	2.5	3.9
East Anglia	3.9	5.0	4.1	3.9	3.6
South East	2.9	3.0	3.2	2.6	3.7
South West	5.1	2.4	4.1	4.1	5.3
TOTAL	5.1	4.1	4.8	-	

Note (i) The unemployment Estimates for the regions were calculated from the Department of Employment Gazette Volume 79, February 1971, and the Department of Employment Gazette Volume 83, February 1975.

(ii) The regional unemployment rate is a proxy for control group unemployment

Fortunately, however, this problem was anticipated when designing the questionnaire and in many sections of the document an attempt was made to automatically control for demand and as a result this should not be a serious or widespread problem when analysing the responses.

As with the dominant plant sample it is also important to examine the distribution of skill groups within the control group plants, and how well established the control group plants are in the area. As Table A3.5 shows the variation in the proprtion of skilled workers in the control group is high but nonetheless very similar to the results observed in the dominant sample. Table A3.6 shows that all the control group plants are well established in the LLM which is again similar in pattern to the dominant plant sample. Accordingly, it would seem reasonable to compare the results of the dominant plant and control group questionnaires without specifically having to take account of differences in skill structure and set-up dates between the samples. (23)

The limited number of observations in the control group and dominant plant samples will also in general, impose restrictions on the possible methods of analysing the questionnaire returns. In particular it will not be feasible to effectively take account of the many influences on plant personnel policy besides dominance. (24)

(23) As Tables 11 & 12 in Appendix 17 indicate there were significant differences between the control group and the dominant plants both in relation to total plant employment and the percentage of manual workers in the two samples. Nevertheless it is not expected that these differences will significantly affect the questionnaire analysis. Referring to average plant size although the differences are substantial the average figures are both well beyond the level required to induce size effects. Similarly the differences between the proportion of manual workers in the two samples should not alter management attitude towards personnel policy within each manual group.

(24) In addition to those mentioned above this would include bargaining structure, industry growth and conderation which are LLM specific .

Therefore, the analysis of the questionnaires will be restricted on most occassions to a simple division between dominant and non-dominant plants with only limited reference to the way in which other variables may influence the results.[25]

This is an important point to remember when trying to isolate the impact of monopsony on dominant plant behavioursince it may be the case that results consistent with monopsonistic predictions may actually reflect other pressures which it was not possible to control for the analysis. The one way to overcome the problem is by looking at variations in the extent of dominance within the dominant plant sample. That is, where possible it will be important to identify whether the impact of monopsony varies with the level of plant dominance. Unfortunately, and in view of the contraints imposed by the limited data set, this can only realistically be achieved by dividing the sample into low and high dominance sub-groups and subsequently tesing for differences between the two.

The limited number of respondents also restricts the sophistication and extent of the statistical techniques which may be used to analyse the dominant plant and control group data. On most occasions it will only be feasible to use basic statistical tests to establish whether there are significant differences either within the dominant plant sample or in comparison with the control group. In some cases even basic tests are not particularly meaningful and the study then has to rely on a more descriptive and impressionistic analysis of the questionnaire returns.

(25) For example, there are an insufficient number of observations in the sample to investigate in any detail the impact of LIM size in determining plant personnel policy.

4 THE INTRA-LLM CONTROL GROUP : THE RELATIONSHIP OF THE DOMINANT PLANTS TO OTHER SMALLER LLM ESTABLISHMENTS

When dealing with the intra-LLM impact of dominant plants, which is largely the impact of plant size on dominant plant personnel policy, it is not practicable to create a suitable control group using questionnaire techniques. The response rate by small firms to questionnaires is extremely low and to ensure a sufficiently large control group would have involved a major research input. This is particularly true as the process of identifying appropriate small manufacturing firms would be difficult.[26] In addition, quantitative data gathered from smaller firms would have to be handled with caution as, generally speaking, smaller plants tend not to maintain comprehensive personnel records and consequently their responses would be more subject to error than large plant returns.

To overcome the problem of the lack of an adequate small establishment control group it was decided to include questions on the relationship between the dominant plant and the smaller LLM plants in the questionnaire sent to the dominant plants. As a result the answers given by the dominant plants, although somewhat subjective, will provide an insight into intra-LLM behaviour without questionnairing smaller establishments.

(26) Even the experience with the large plant control group confirmed this.

To compliment the questionnaire data the results from previous studies into small firm behaviour will be included in the analysis where appropriate as a proxy control group. Indeed where possible the intra-LLM comparisons incorporated into the dominant plant questionnaire were based on the format used in more general studies of personnel policy that also covered small plant behaviour. Therefore, although a control group was not developed specifically to examine the intra-LLM characteristic of dominant behaviour, the information gathered from the dominant plant questionnaire and other external sources should be sufficient to provide an insight into the nature of dominant plant behaviour in relation to the other (smaller) establishments operating in the LLM.

APPENDIX 4

A LOCAL LABOUR MARKET LIST WITH ASSOCIATED LOCAL AUTHORITY AND EMPLOYMENT AREAS

SERIAL NO	LLM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
REGION I : SCOTLAND (31 LLMs)				
015	Aberdeen	Aberdeen	Aberdeen,	
011	Alloa	Alloa, Alloa DC,	Alloa,	
006	Arbroath	Arbroath	Arbroath & Carnoustie,	
011	Ayr	Ayr, Prestwick, Ayr DC	Ayr, Troon, Maybole	
024	Bathgate	Bathgate, Bathgate DC, Armadale, Whitburn, Whitburn DC	Bathgate	
010	Buckhaven	Buckhaven, Leven, Wemyss DC	Leven & Methil	
013	Dumfries	Dumfries	Dumfries	
012	Dundee	Dundee	Dundee, Tayport, Broughty Ferry	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
009	Dunfermline	Dunfermline, Inverkeithing	Dunfermline Inverkeithing SO.	
021	Dunoon	Dunoon	Dunoon	
019	Edinburgh	Edinburgh	Edinburgh, Leith, Portobello	
004	Elgin	Elgin	Elgin, Losiemouth Keith	
026	Falkirk	Falkirk, Stirling E1DC, Stirling E2DC	Falkirk	
007	Forfar	Forfar	Forfar	
005	Fraserburgh	Fraserburgh	Fraserburgh	
017	Gala	Gala	Gala	
020	Glasgow	Glasgow	Old Kilpatrick, Partick, Springburn, Hillington, Govan, Kinning Park, Bridgeton, Cambuslang, Parkhead, Maryhill	
028	Greenock	Greenock, Gourock	Greenock	
016	Hawick	Hawick	Hawick	
001	Inverness	Inverness	Inverness	
023	Irvine	Irvine, Ardrossan, Saltcoats, Stevenson, Irvine DC	Saltcoats, Kilwinning, Irvine	

SERIAL NO	LLM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
030	Kilmarnock	Kilmarnock	Kilmarnock	underbounded
018	Kirkcaldy	Kirkcaldy	Kirkcaldy	
008	Montrose	Montrose	Montrose	
024	Motherwell	Motherwell, Hamilton, Lanark 6DC	Motherwell, Hamilton, Bellshill, Wishaw	
025	Paisley	Paisley, Johnstone, Renfrew 2DC	Paisley, Johnstone, Barrhead	the "Linwood" problem
002	Perth	Perth	Perth & Pitlochry	
031	Peterhead	Peterhead	Peterhead	
029	St Andrews	St Andrews	St Andrews	just under 10,000 in population
003	Stirling	Stirling, Bridge of Allan, Stirling, Central No 1 DC	Stirling	
022	Stranraer	Stranraer	Stranraer	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
REGION II : WALES (19 LIMs)				
050	Aberdare	Aberdare	Aberdare	underbounded because of industrial estate outside of the town
032	Aberystwyth	Aberystwyth	Aberystwyth	underbounded town
045	Bangor	Bangor, Bethesda, Ogwen RD	Bangor, Bethesda	
045	Caerphilly	Bedas & Machen Caerphilly, Gelligaer, Bedweltry, Rhymney	Pontlottyn, Borgeod, Mynach, Senghandydd, Ystrach, Caerphilly, Blackwood	included under the "Leamington" Rule
038	Cardiff	Cardiff	Cardiff	
033	Carmarthgn	Carmarthgn	Carmarthgn	underbounded town
047	Colwyn Bay	Colwyn Bay	Colwyn Bay	
040	Ebbw Vale	Ebbw Vale, Tredegar, Brynmawr	Ebbw Vale, Tredegar, Brynmawr	
044	Holyhead	Holyhead	Holyhead	
046	Llandudno	Llandudno	Llandudno	
049	Llanelli	Llanelli, Llanelli RD	Llanelli, Tumble, Pontardulais	just over 50,000 acres

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
039	Merthyr Tydfil	Mertyhr, Tydfil	Mertyhr, Tydfil Dowlais, Treharris	
035	Milford Heven	Milford Heven	Milford Haven	
042	Newport	Newport	Newport, Newport Docks	
034	Pembroke	Pembroke	Pembroke Dock	
041	Pontypool Cumbran	Pontypool, Cumbran	Porypool, Cumbran	
048	Rhyl	Rhyl	Rhyl	
036	Swansea	Swansea	Swansea, Morriston	
REGION 3 : NORTHERN (27 LIMs)				
052	Ashington	Ashington, Newbiggin	Ashington	
053	Bedlington	Bedlington	Bedlington	
051	Berwick	Berwick	Berwick	
075	Bishop-Auckland	Bishop-Auckland, Shildon	Bishop Auckland Shildon	
054	Blyth	Blyth	Blyth	
068	Carlisle	Carlisle	Carlisle	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
058	Chester-Le-Street	Chester-Le-Street, Chester RD	Chester-Le-Street Birtley	
061	Consett	Consett	Consett	
066	Crook & Wellington	Crook & Wellington	Crook	
067	Darlington	Darlington	Darlington	
057	Durham	Durham, Brandon & Byshottles	Durham	
063	Easington	Easington RD	Peterlee, Wingate	Rural district with large urban parish (Horden)
064	Hartlepool	Hartlepool	Hartlepool	Included under "Leamington" rule
071	Kendal	Kendal	Kendal	
077	Maryport Workington	Maryport, Workington	Maryport, Workington	Non-contigious towns
074	Newcastle	Newcastle, Gosforth, Longbenton, Newburn, Gateshead	Newburn, Newcastle, Gateshead	Included under "Leamington" rule
069	Penrith	Penrith	Penrith	
073	Scarborough	Scarborough, Scalby	Scarborough	LIM droped on computer file

SERIAL NO	LLM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
060	Seaham	Seaham	Seaham	
055	South Shields	South Shields, Jarrow, Hebburn, Boldon	South Shields, East Boldon, Jarrow & Hebburn	
065	Spennymoor	Spennymoor, Sedgefield	Spennymoor	
062	Stanley	Stanley	Stanley	
056	Sunderland	Sunderland	Sunderland, Southwich	
076	Teeside	Teeside CB	Billingham, Eston, Redcar, Middelsburgh Stockton, Thornaby	Includeded under "Leamington" rule
059	Washington	Washington	Washington	
072	Whitby	Whitby	Whitby	LLM dropped on computer file
070	Whitehaven	Whitehaven	Whitehaven	
REGION 4 : NORTH WEST (37 LLMs)				
078	Accrington	Accrington, Church, Clayton-Le-Moors, Aswaldwhistle	Accrington	
079	Ashton Under Lyne	Ashton-U-Lyne, Audenshaw, Denton, Dulinfield, Hyde	Ashton, Stalybridge, Denton, Hyde	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
103	Bacup	Bacup	Bacup	
081	Blackburn	Blackburn	Blackburn	
114	Bedlington	Bedlington, Birkenhead, Ellesmere Port, Haylake, Neston, Wallasey, Wirrall	Haylake, Wallasey Birkenhead, Bedlington Ellesmere Port, Neston	
080	Barrow-in Furness	Barrow-in-Furness	Barrow	
082	Blackpool	Blackpool	Blackpool	
083	Bolton	Bolton	Bolton	
084	Burnley	Burnley	Burnley	
085	Bury	Bury	Bury	
086	Chester	Chester, Chester RD	Chester	
101	Chorley	Chorley, Leyland, Chorley RD	Chorley, Leyland	
087	Clitheroe	Clitheroe	Clitheroe	
097	Colne	Colne, Trawden	Colne	
088	Crewe	Crewe	Crewe	
089	Darwen	Darwen	Darwen	
092	Fleetwood	Fleetwood	Fleetwood	

SERIAL NO	LLM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
093	Flint	Buckley, Flint, Connah's Quay, Holywell, Mold, Horworden RD	Shotton, Flint, Mold, Buckley	Mold non-contigious with the rest of area
104	Haslington	Haslington	Haslington	
090	Lancaster	Lancaster	Lancaster	
113	Leigh	Leigh, Irlam, Golborne, Hindley Atherton	Leigh, Golborne, Irlam, Hindley, Atherton	
091	Liverpool	Liverpool	Garston, Liverpool, Old Swan, Walton	
095	Macclesfield	Macclesfield	Macclesfield	
044	Manchester	Manchester, Droylesdon, Middleton Prestwich Sale, Stretford, Urmston, Whitefield	Manchester, Newton Heath, Openshaw, Levershulme, Withington, Prestwich, Wythenshawe Stretford, Middleton	
098	Middlewich	Middlewich, Sandlach, Congleton RD	Middlewich Sandbach	
096	Nelson	Nelson	Nelson	
099	Oldham	Oldham, Chadderton, Lees	Oldham & Chadderton	
100	Preston	Preston, Falwood	Preston	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
106	Rawtenstall	Rawtenstall	Rawtenstall	
102	Rochdale	Rochdale	Rochdale	
107	Runcorn	Runcorn	Runcorn	
108	St Helens	St Helens	St Helens	
109	Southport	Southport	Southport	
105	Stockport	Stockport, Bredbury, Cheadle, Hayle Grove, Marple	Stockport, Marple	
110	Warrington	Warrington Lymme, Warrington RD	Warrington	
111	Widness	Widness	Widness	
112	Wigan	Wigan, Aspull, Billinge Ince, Orrell, Standish, Wigan RD, Skelmersdale	Wigan, Standish, Skelmersdale	
REGION 5 : YORKSHIRE HUMBERSIDE (23 LIMs)				
140	Airebrough	Airebrough, Ilkley, Otley	Oyley, Yeadon	
124	Barnsley	Barnsley, Cudsworth Darton, Worsbrough	Barnsley	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
117	Bradford	Bradford	Bradford	
126	Bridlington	Bridlington	Bridlington	
122	Dewsbury	Dewsbury, Mirrfield Batley	Dewsbury, Batley	
134	Doncaster	Doncaster, Bentley Adwich	Doncaster	
118	Halifax	Halifax	Halifax	
138	Harrowgate	Harrowgate	Harrowgate	
125	Hansworth	Hansworth, Honsworth RD	Hansworth, Royston S Kirby	
123	Huddersfield	Huddersfield	Huddersfield	
127	Hull	Hull	Hull	
120	Goole	Goole	Goole	
132	Grimsby	Grimsby	Grimsby	
139	Keighley	Keighley	Keighley (including Haworth SO)	
116	Leeds	Leeds CB	Leeds	
135	Mexbrough	Mexbrough, Swinton, Wath	Mexbrough	

SERIAL NO	LLM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
119	Pontefract	Pontefract, Castleford, Featherstore	Pontefract, Castleford	
133	Ripon	Ripon	Ripon	
136	Rotherham	Rotherham, Rotherham RD	Rotherham	
128	Scunthorpe	Scunthorpe	Scunthorpe	
137	Sheffield	Sheffield	Sheffield, Altercliffe	
121	Wakefield	Wakefield, Stanley, Normanton, Wakefield RD	Wakefield, Normanton	
115	York	York, Fraxton RD	York	
REGION 6 : WEST MIDLANDS (22 LLMs)				
156	Birmingham	Birmingham	Aston, Hardworth, Birmingham, Washwood Heath, Selly-Oak Small Heath	Just over 50,000 acres
153	Congleton	Congleton	Congleton	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
142	Coventry	Conventry	Coventry	
158	Dawley-Telford	Oakengates,	Wellington, Oakengates	underbounded (see Linwood)
306	Dudley-Worley	Dawley, Wellington RD	Madeley	
161	Evesham	Evesham	Evesham	underbouned town
151	Hereford	Hereford	Hereford	
144	Kidderminster	Kidderminster	Kidderminster	
149	Leek	Leek	Leek	
152	Malvern	Malvern	Malvern	
159	Oswestry	Oswestry	Oswestry	underbounded town
143	Redditch	Redditch	Redditch	
154	Rugby	Rugby	Rugby	
155	Shrewsbury	Shrewsbury	Shrewsbury	
160	Stafford	Stafford	Stafford	underbounded town
150	Stoke on Trent	Stoke on Trent	Stoke on Trent	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
141	Stratford on Avon	Stratford on Avon	Stratford on Avon	
147	Tamworth	Tamworth, Tamworth RD	Tamworth	
146	Walsall	Walsall CB	Wallsall, Willenhall Dorlaston	
157	Warwick/ Leamington	Warwick, Royal Leamington Spa	Leamington & Warwick	included under "Leamington" rule
148	Wolverhampton	Wolverhampton CB	Wolverhampton, Bilston	
145	Worcester	Worcester	Worcester	
306	Dudley-Warley	Dudley-Warley	Dudley-Warley	Included under "Leamington" rule
REGION 7 : EAST MIDLANDS (26 LIMs)				
176	Boston	Boston	Boston	
169	Burton on Trent	Burton on Trent, Tutbury RD	Burton on Trent	
186	Coalville	Coalville	Coalville	underbounded town

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
187	Chesterfield	Chesterfield, Staveley	Chesterfield, Staveley	included under "Leamington" rule
180	Corby	Corby	Corby	
185	Derby	Derby	Derby	underbounded town
167	East Retford	East Retford MB	East Retford	
178	Grantham	Grantham	Grantham	
175	Hinkley	Hinkley	Hinkley	
182	Kettering	Kettering	Kettering	
165	Kirkby-in-Ashfield	Kirkly-in-Ashfield Sutton-in-Ashfield	Sutton-in-Ashfield	
170	Leicester	Leicester	Leicester	
179	Lincoln	Lincoln	Lincoln	
173	Loughbrough	Loughbrough	Loughbrough	
164	Mansfield	Mansfield, Mansfield Woodhouse	Mansfield	
174	Market Harbrough	Market Harbrough	Market Harbrough	
162	Matlock	Matlock	Matlock	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
172	Melton Mowbray	Melton Mowbray	Melton Mowbray	
166	Newark	Newark, Newark RD	Neward	
183	Northampton	Northampton	Northampton	
163	Nottingham	Nottingham	Nottingham	
181	Rushden	Rushden	Rushden	
177	Spalding	Spalding	Spalding	
171	Stamford	Stamford & Ketton RD	Stamford	
184	Wellingbrough	Wellingbrough	Wellingbrough	
168	Worksop	Worksop MB	Worksop	
REGION 8 : EAST ANGLIA (12 LLMs)				
195	Bury St Edmunds	Bury St Edmunds	Bury St Edmunds	
196	Cambridge	Cambridge	Cambridge, Saffron Walden SO	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
193	Felixstowe	Felixstowe	Felixstowe	
191	Great Yardmouth	Great Yardmouth	Great Yardmouth	
194	Ipswich	Ipswich	Ipswich	
190	Kings Lyn	Kings Lyn	Kings Lyn	
192	Lowestaft	Lowestoft	Lowestoft	
189	March	March	March, Chatteris SO	
198	Newmarket	Newmarket	Newmarket	underbounded town
199	Norwich	Norwich	Norwich	underbounded town
188	Peterborough	Peterborough Old Fletton	Peterborough	
197	Wisbech	Wisbech	Wisbech	underloaded town

REGION 9 : THE SOUTH WEST (42 LIMs)

299	Barnstable	Barnstable	Barnstable	underbounded town
262	Bath	Bath	Bath	
263	Bideford	Bideford, Northam	Bideford	

SERIAL NO	LLM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
264	Bridgewater	Bridgewater	Bridgewater	
265	Bridport	Bridport, Bridport RD	Bridport	
266	Bristol	Bristol	Avonmouth, Briston, Westbury on Trym, Tilton Kingswood	
267	Cheltenham	Cheltenham	Cheltenham	
268	Chippenham	Chippenham	Chippenham	
269	Cirencaster	Cirencaster	Cirencaster	
300	Dorchester	Dorchester	Dorchester	underbounded town
270	Exeter	Exeter	Exeter	
271	Exmouth	Exmouth	Exmouth	
272	Falmouth	Falmouth, Penryn	Falmouth	
273	Frome	Frome	Frome	
274	Gloucester	Gloucester	Gloucester	
275	Melksham	Melksham Melksham RD	Melksham	

SERIAL NO	LLM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
276	Newquay	Newquay	Newquay	
301	Newton Abbott	Newton Abbott	Newton Abbott	underbounded town
278	Penzance	Penzance	Penzance	
279	Plymouth	Plymouth	Plymouth, Davenport	
280				
281	St Austell	St Austell, Fawely	St Austell	
302	St Ives	St Ives	St Ives	just under 10,000 population
282	Salisbury	Salisbury	Salisbury, Amesbury SO, Tidworth SO	
283	Shaftesbury	Shaftesbury, Shaftesbury RD	Shaftesbury	
284	Shepton Mallet	Shepton Mallet, Shepton RD	Shepton Mallett	
285	Sherborne	Sherborne, Sherborne RD	Sherborne	
286	Sidmouth	Sidmouth	Sidmouth SO, Honiton	
287	Street	Street, Glasenbury	Street, Walls SO	

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
288	Stroud	Stoud, Stroud RD, Nailsworth	Stroud, Nailsworth SO Tetbury SO	
289	Swindon	Swindon	Swindon	
290	Taunton	Taunton	Taunton	
291	Teignmouth	Teignmouth	Teignmouth	
292	Tiverton	Tiverton	Tiverton, Collington SO	
293	Torquay			
294	Trowbridge	Towbridge Bradford	Trawbridge	
295	Truro	Truro	Truro, Perranporth SO	
303	Warminster	Warminster	Warminster	just under 10,000 population
297	Weston-Super-Mare	Weston-Super-Mare	Weston-Super-Mare, Axbridge SO	
298	Weymouth	Weymouth	Weymouth, Portland SO	
304	Yeovil	Yeovil	Yeovil	underbounded town
REGION 10 : SOUTH EAST (62 LIMs)				
225	Aldershot	Aldershot, Farnham	Aldershot Farnham	included under "Leamington" rule

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
217	Andover	Andover	Andover	
238	Ashford	Ashford	Ashford	
261	Aylesbury	Aylesbury	Aylesbury	underbounded town
207	Baldock	Baldock, Hitchen, Letchworth	Letchworth & Hitchen	
260	Banbury	Banbury	Banbury	underbounded town
218	Basingstoke	Basingstoke	Basingstoke	underbounded town
211	Bedford	Bedford, Kempston	Bedford	
233	Bexhill	Bexhill	Bexhill	
206	Biggleswade	Biggleswade, Sandy	Biggleswade	
212	Bletchley	Bletchley	Bletchley	
231	Bognor Regis	Bognor Regis	Bognor Regis	
219	Bournemouth	Bournemouth	Bournemouth	
203	Braintree	Braintree	Braintree	
234 247	Brighton Broadstairs	Brighton Broadstairs, Ramsgate	Brighton, Ramsgate	

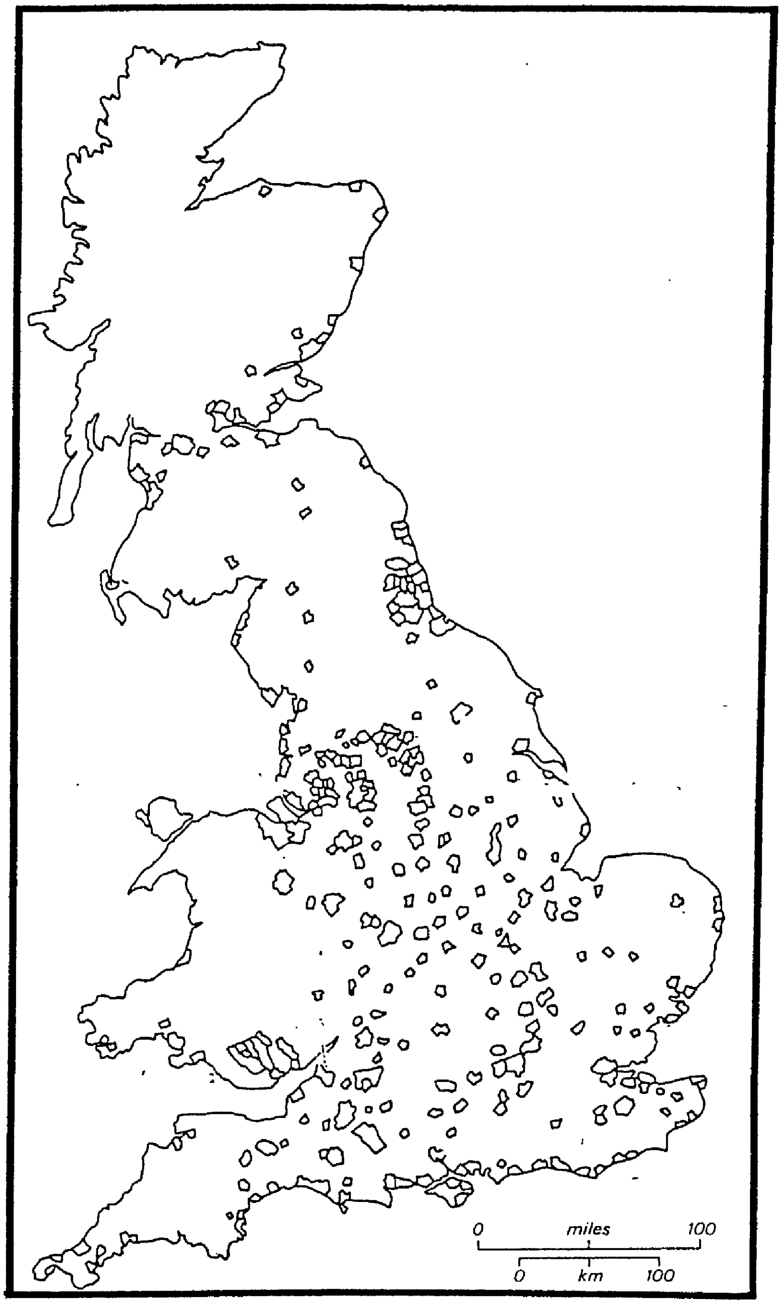
SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
255	Canterbury	Canterbury	Canterbury	underbounded town
239	Chatham	Chatham, Gillinham Rochester	Chatham	
257	Chelmsford	Chelmsford	Chelmsford	underbounded town
254	Chichester	Chichester	Chichester	underbounded town
200	Clackton	Clackton	Clackton, Trinton SO	
201	Colchester	Colchester	Colchester, Brightingsea BSO	
227	Cowes	Cowes	Cowes	
230	Crawley	Crawley	Crawley	
240	Dover	Dover	Dover	
235	Eastborne	Eastborne	Eastborne	
224	Farnborough	Farnbourgh, Frimley & Camberley	Farnbrough, Camberley	included under "Lemington" rule
241	Faversham	Faversham	Faversham	
242	Folkstone	Folkstone	Folkstone	
222	Gosport	Gosport	Gosport	

SERIAL NO	LLM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
251	Gravesend	Gravesend, Northfleet, Swayscombe	Gravesend	
204	Harlow	Harlow	Harlow, Epping SO	
256	Harwich	Harwich	Harwoch	Linwood type underbounding
236	Hastings	Hastings	Hastings	
208	Hemel Hempsted	Hemel Hempsted	Hemel Hempstead, Berkhamsted SO	
258	High Wycombe	High Wycombe	High Wycome	underbounded town
210	Luton	Luton	Luton	
220	Lymington	Lymington	Lymington	
213	Maidenhead	Maidenhead Cookham RD	Maidenhead	
243	Maidstone	Maidstone, Maidstone RD	Maidston	
202	Maldon	Maldon	Maldon, Burnham on Crouch	
246	Margate	Margate	Margate	

SERIAL NO	LLM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
216	Newbury	Newbury, Newbury DC	Newbury	
237	Newhaven	Newhaven, Seaford	Newhaven	
259	Oxford	Oxford	Oxford	underbounded town
250	Poole	Poole	Poole	
221	Portsmouth	Portsmouth	Portsmouth	
215	Reading	Reading	Reading	
248	Royal-Tunbridge Wells	Royal-Tunbridge Wells Southborough	Tunbridge Wells	included under "Lemington" rule
228	Ryde	Ryde	Ryde	
226	Sandown	Sandown-Shanklin	Sandown	
245	Sheerness	Queensborough in Sheppey	Sheerness	
244	Sittingborne	Sittingbourne & Milton	Sittingbourne	
214	Slough	Slough, Eton RD	Slough	included in "Lemington" rule

SERIAL NO	LIM NAME	LOCAL AUTHORITY AREAS	DEPARTMENT OF EMPLOYMENT AREAS	COMMENTS
223	Southampton	Southampton	Southampton, Wolston	
205	Stevenage	Stevenage	Stevenage	
252	Thurrock	Thurrock	Thurrock	
249	Tonbridge	Tonbridge	Tonbridge, Grays, Stanford-le-hope	
229	Walton & Weybridge	Walton & Weybridge, Chertsen	Weybridge, Working	included under "Lemington" rule
209	Watford	Watford, Bushey, Rickmonsworth	Watford, Rickmonsworth	included under "Lemington" rule
253	Winchester	Winchester	Winchester	underbounded town
232	Worthing	Worthing	Worthing	

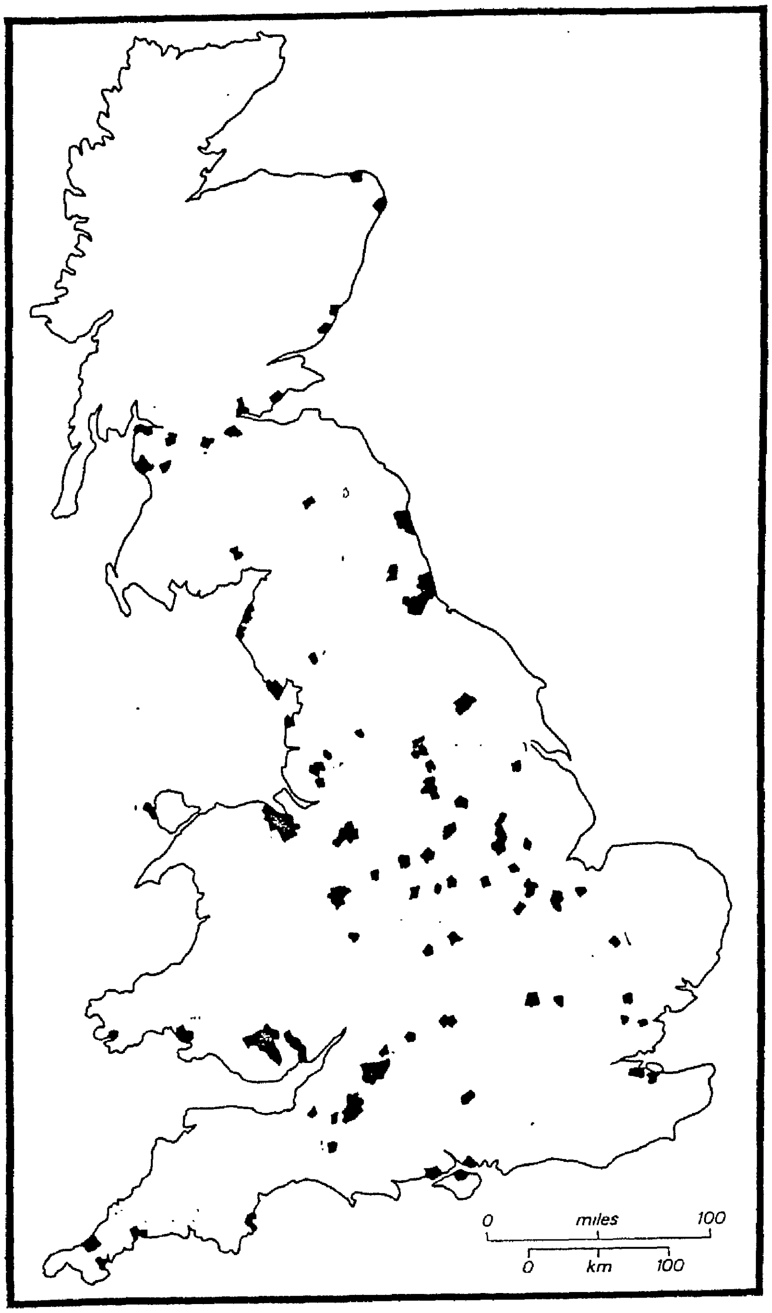
GEOGRAPHICAL DISTRIBUTION OF IDENTIFIED LLMs



Adapted from Lever (1981)

APPENDIX 7

THE REGIONAL DISTRIBUTION OF PLANT DOMINATED LLMs



Adapted from Lever (1981)

KEY CHARACTERISTICS OF INDUSTRY DOMINATED LOCAL MARKETS

REGION	LLM NO	LABOUR MARKET	MLH	% EMPLOYED
Yorks Humber	117	Bradford	414	13.28
	122	Dewsbury	414	13.78
	123	Huddersfield	414	21.66
	139	Keighly	414	16.67
	137	Sheffield	311	13.95
East Midlands	175	Hinkley	417	30.32
	182	Kettering	450	16.28
	170	Leicester	417	15.07
	181	Rushden	450	38.21
	184	Wellingborough	450	14.61
West Midlands	142	Coventry	381	24.85
	143	Redditch	399	18.32
	150	Stoke	462	26.90
	146	Walsall	399	15.81
East Anglia	192	Lowestoft	218	12.65
Scotland	007	Forfar	415	15.04
	017	Galashiels	414	18.33
North West	078	Accrington	335	12.53
	103	Bacup	450	33.45
	097	Colne	413	16.39
	104	Haslingden	413	25.21
	106	Rawtenstall	450	22.83
	107	Runcorn	271	25.37
	111	Widnes	271	16.89
South East	206	Biggleswade	332	14.05
	203	Braintree	399	17.14
	251	Gravesend	481	12.83
	258	High Wycombe	472	17.41
Northern	069	Penrith	469	23.0
South West	268	Chippenham	214	26.2
	269	Cirencester	383	15.22
	279	Plymouth	371	13.24
	297	Weston-super-mare	383	13.27
	301	Newton Abbott	383	13.0
Wales	035	Milford Haven	262	16.51

APPENDIX 10

PLANTS CONTACTED IN PERSONNEL THE POLICY PILOT EXERCISES

1 Phillips Electrical Ltd
Hamilton
(Mr T Tait)

2 Rayrolle Belmos Ltd
Blantyre
(Mr W Stevens)

3 Singer Corporation (UK) Ltd
Clydebank
(Mr D Haldare)

4 IBM Ltd
Greenock
(Mr C A Richmond)

5 Ailsa trucks Ltd
Irvine
(Mr J C Brownlow)

6 Anderson Strathclyde Ltd
Glasgow
(Mr L F G Walker)

7 Babcock & Wilcox Ltd
Renfrew
(Mr T Donegan)

8 Caterpillar Tractor Co.
Uddingston
(Mr W Wilkinson)

9 United Glass Containers Ltd
Glasgow
(Mr W Dunn)

10 John Brown Engineering Ltd
Clydebank
(Mr W Allan)

APPENDIX 11

PERSONNEL POLICY ANALYSIS

CONTROL GROUP PLANTS CONTACTED

Code No	Company	Comments
400	Wiggins Teape Ltd, Aberdeen	Questionnaire completed
401	Timex Ltd, Dundee	No response
402	Ferranti Ltd, Edinburgh	Questionnaire completed
403	Carron Co Ltd, Falkirk	Questionnaire completed
404	Glynwed Foundries Ltd, Falkirk	No response
405	India Tyres, Glasgow	Questionnaire completed
406	John G Kincaid & Co Ltd, Greenock	No response
407	B.S.C. Ltd, Cardiff	Refused
408	British Leyland (UK) Ltd, Cardiff	Questionnaire completed
409	G.K.N. Rolled & Bright Steel Ltd Cardiff	No response
410	Ford Motor Co Ltd, Swansea	No response
411	Mettoy Ltd, Swansea	No response
412	A.E.I. Cables Ltd, Birtley	No response
413	Austin & Pickersgill Ltd, Sunderland	No response
414	British Titan Producers Co Ltd Teeside	No response
415	Hall & Kay Ltd, Ashton-under-Lyne	No response
416	Scapa-Porritt Ltd, Blackburn	No response
417	Duple Coach Builders Ltd, Blackpool	No response
418	Crosses & Heatons Ltd, Bolton	Moved
419	Lambert Hawarch Group Ltd, Burnley	Questionnaire completed
420	Bibbey & Baron Ltd, Bury	No response
421	Tillie & Henderson, Chester	Firm ceased trading
422	Trutex Ltd, Clitheroe	No response
423	Lansil Ltd, Lancaster	No response
424	Storey Brothers & Co Ltd, Lancaster	No response
425	Automotive Products Ltd, Liverpool	Questionnaire completed
426	G Brady & Co Ltd, Manchester	Refused
427	Newroyd Ltd, Oldham	Refused
428	M G D Graphic Systems Ltd Preston	No response
429	John Bright & Bros Ltd, Rochdale	No response
430	W Briggs & Co Ltd, Stockport	No response
431	Joseph Crosfield & Sons Warrington	No response
432	Gullick, Dobson Ltd, Wigan	Questionnaire completed
433	David Brown, Sheffield	Refused

434	Shaw Carpets, Barnsley	No response
435	Redfearn National Glass, Barnsley	Questionnaire completed
436	United Biscuits, Halifax	Refused
437	Rowantree Mackintosh, Halifax	No response
438	John Crossley & Sons Ltd, Halifax	No response
439	I C I (Fibres), Harrogate	Refused
440	Birds Eye Foods, Hull	No response
441	B P Chemicals, Hull	Refused
442	Reckitt & Colman, Hull	Questionnaire completed
443	Ideal Standard Ltd, Hull	No response
444	Metal Box Co Ltd, Hull	No response
445	J H Fenner & Co (Holdings) Ltd Hull	No response
446	Birds Eye Foods, Grimsby	No response
447	Findus Foods, Cleethorps	No response
448	Allied Breweries, Leeds	No response
449	Elida Gibbs, Leeds	Questionnaire completed
450	West Yorkshire Foundries, Leeds	No response
451	Doncaster's Monk Bridge, Leeds	No response
452	Montague Burton, Leeds	No response
453	C M Sumrie Claches Ltd, Leeds	No response
454	Kirkstall Forge Engineering, Leeds	No response
455	N C B, Wakefield	No response
456	International Sports, Wakefield	No response
457	Wakefield Shirt Co Ltd, Wakefield	No response
458	Parkinson Cowan, Birmingham	No response
459	Valor Heating, Birmingham	No response
460	Southalls, Birmingham	Refused
461	Alcan Booth Sheet Ltd, Birmingham	No response
462	Austin Morris, Birmingham	Questionnaire completed
463	Dunlop (Accessories) Ltd, Birmingham	Not suitable.
464	Laughton & Sons, Birmingham	No response
465	Cadbury Schweppes Foods Ltd, Birmingham	No response
466	Birmetals Ltd, Birmingham	Refused
467	Birway Engineering Co Ltd, Birmingham	No response
468	Triplex Safety Glass, Birmingham	No response
469	Kalamazoo, Birmingham	No response
470	Bulpitt & Sons Ltd, Birmingham	Refusal
471	Wilmatt Breeden, Birmingham	No response
472	Serck Heat Transfer, Birmingham	No response
473	Black & Luff Ltd, Birmingham	No response
474	Midland Electric Mfg Co Ltd Birmingham	Refusal
475	Girling Ltd, Birmingham	No response
476	W Canning & Co Ltd, Birmingham	Refusal
477	Unigate, Birmingham	No response
478	Allied Breweries, Birmingham	No response
479	Tubes Ltd, Birmingham	Questionnaire completed
480	Imperial Metal Industries, Birmingham	Questionnaire completed
481	Parsons Peebles Motors & Generators Ltd, Birmingham	Refusal

482	Hardy Spicer Ltd, Birmingham	No response
483	Radiation Gas Fibres, Birmingham	Refusal
484	Tuker Fasteners, Birmingham	No response
485	Chance Brothers, Warley	No response
486	Dartmouth Auto Casings, Warley	No response
487	Midland Motor Cylinder, Warley	No response
488	Birmingham Aluminium Casting, Warley	No response
489	W & T Avery, Warley	Questionnaire completed
490	Albright & Wilson Ltd, Warley	Questionnaire completed
491	Tube Products, Warley	No response
492	Accles & Pollock, Warley	No response
493	Round Oak Steel Works, Dudley	No response
494	Ewarts Ltd, Dudley	No response
495	B S R Ltd, Warley	No response
496	T W Lench, Warley	No response
497	H P Bulmer Ltd, Hereford	No response
498	Henry Wiggin & Co, Hereford	No response
499	Brittains Paper Ltd, Leek	No response
500	Rolls Royce Motors Ltd, Shrewsbury	Questionnaire completed
501	Marston Excelsior, Wolverhampton	No response
502	Chubb & Sons Ltd, Wolverhampton	No response
503	Turner Manufacturing, Wolverhampton	Refusal
504	Lucas Aerospace, Wolverhampton	No response
505	Goodyear Tyre & Rubber Co Wolverhampton	No response
506	Ever Ready, Wolverhampton	No response
507	Willenhall Motor Radiator, Wolverhampton	Moved
508	Wednesbury Tube, Wolverhampton	Questionnaire completed
509	Rockwell Thompson, Wolverhampton	No response
510	Metal Castings Doehler Ltd, Worcester	No response
511	Redman, Hennan & Freude Ltd, Worcester	Questionnaire completed
512	Sheepbridge Equipment, Chesterfield	No response
513	Glass Tube & Components, Chesterfield	No response
514	N C B, Chesterfield	Refusal
515	G E C Elliot Process Automation Ltd, Leicester	Questionnaire completed
516	Marconi Radar Systems Ltd, Leicester	Questionnaire completed
517	Thorn Lighting Ltd, Leicester	No response
518	Dunlop Ltd, Leicester	No response
519	A A Jones & Shipman, Leicester	Refusal
520	G E C Gas Turbines, Leicester	Refusal
521	Wildt, Mellar, Bromley Ltd, Leicester	No response
522	Frederick Parker, Leicester	Refusal

523	Imperial Typewriters Ltd, Leicester	Liquidated
524	British United Shoe Machinery, Leicester	Questionnaire completed
525	Rushton-Bucyrus Ltd, Lincoln	No response
526	Clayton Dewandre, Lincoln	No response
527	Smith-Clayton Forge, Leicester	No response
528	Watney Mann, Northampton	No response
529	Avon Cosmetics, Northampton	No response
530	Express Lift Co, Northampton	Questionnaire completed
531	British Timken, Northampton	No response
532	N C B, Nottingham	No response
533	Meridian Ltd, Nottingham	No response
534	J Player, Nottingham	Questionnaire completed
535	The Boots Co Ltd, Nottingham	Refusal
536	Jersey Kapwood, Nottingham	No response
537	Marathon Knitwear, Nottingham	Refusal
538	British Gypsum, Nottingham	No response
539	Lockwood Foods Ltd, Spalding	No response
540	Cadbury Schweppes, Cambridge	No response
541	Pye Telecommunications, Cambridge	Refusal
542	Birds Eye, Great Yarmouth	No response
543	Erie Electronics, Great Yarmouth	No response
544	Ransomes, Sims & Jeffries, Ipswich	No response
545	Lawrence, Scott & Electromotors Ltd, Norwich	Questionnaire completed
546	Boulton & Paul Group, Norwich	Questionnaire completed
547	Rowantree Mackintosh Ltd, Norwich	No response
548	Reckitt & Colman, Norwich	No response
549	Jarrold & Sons Ltd, Norwich	No response
550	Norvic Shoe Co Ltd, Norwich	Refusal
551	Permoli Ltd, Gloucester	No response
552	Winterbatham, Strachan, Playne Ltd, Stroud	No response
553	John Heathcoat & Co, Tiverton	Questionnaire completed
554	Hazell, Watson & Viney, Aylesbury	Refusal
555	International Computers Ltd Letchworth	No response
556	Borg Warner, Letchworth	No response
557	General Foods, Ltd, Banbury	No response
558	Automotive Products Ltd, Banbury	No response
559	G Fischer Castings Ltd, Bedford	Refusal
560	Texas Instruments Ltd, Bedford	No response
561	W J Allen & Sons Ltd, Bedford	No response
562	London Brick Co Ltd, Bedford	No response
563	Brookhirst Igranic Ltd, Bedford	No response
564	Scot Meat Products, Milton Keynes	No response
565	LEC Refrigeration Ltd, Bognar Regis	No response
566	Aylesford Paper Mills, Maidstone	Refusal
567	B D H Chemicals Ltd, Poole	No response
568	P D fuels Ltd, Portsmouth	No response
569	Associated Biscuit Manufacturers, Reading	Refusal

570	Courage Ltd, Reading	No response
571	Gillette Industries, Reading	No response
572	Mars Ltd, Slough	Questionnaire completed
573	Kearney & Trecker Manwin Ltd, Brighton	No response
574	Rustan Paxman Diesels Ltd, Colchester	No response
575	The Colchester Lathe Co Ltd, Colchester	No response
576	Woods of Colchester, Colchester	Questionnaire completed
577	The M E L Equipment Co Ltd, Crawley	No response
578	Solartron-Schlumberger Ltd, Farnborough	Refusal
579	Pitney-Bows Ltd, Harlow	No response
580	I T T Components Group Europe, Harlow	No response
581	Cossar Electronics Ltd, Harlow	No response
582	U G Glass Containers Ltd, Harlow	No response
583	Addressograph-Multigraph Ltd, Hemel Hempstead	No response
584	Lucas Aerospace Ltd, Hemel Hempstead	No response
585	Alford & Alder Components, Hemel Hempstead	No response
586	John Dickinson & Co Ltd, Hemel Hempstead	No response
587	Kodak ltd, Hemel Hempstead	No response
588	Vandervell Products Ltd, Maidenhead	No response
589	Scammell Motors, Watford	Refusal
590	Rolls Royce (1971) Ltd, Watford	Questionnaire completed
591	John Dickinson Ltd, Watford	No response
592	Odhams (Watford) Ltd, Watford	No response
593	Sun Printers, Watford	Questionnaire completed
594	Associated Newspapers Ltd, London	No response
595	Beautility Furniture Ltd, London	No response
596	Sir Josepth Couston & Sons Ltd, London	No response
597	Centre Hotels (Cranston) Ltd, London	No response
598	Chubb & Sons Lock & Safe Co Ltd, London	No response
599	Daks-Simpson Ltd, London	Questionnaire completed
600	John Dale Ltd, London	Moved
601	Henry Denny & Sons Ltd, London	No response
602	Dresser Europe SA-UK Branch, London	No response
603	Dubilier Ltd, London	No response
604	Duple Motor Bodies Ltd, London	Refusal
605	Edmunsons Electrical Ltd, London	Moved
606	Elida Gibbs Ltd, London	No response
607	Foster Wheeler Ltd, London	Not in manufacturing
608	Arthur Guiness & Son & Co Ltd London	Refusal
609	John Haig & Co Ltd, London	No response

610	Hutchinson Printing Trust Ltd, London	Not suitable
611	L R Industries Ltd, London	No response
612	Lamson Paragon Ltd, London	Not suitable
613	The M-O Valve Co Ltd, London	No response
614	Donald Macpherson Group Ltd, London	No response
615	William Mallinson & Denny Matt Ltd, London	No response
616	Mattessons Meats Ltd, London	No response
617	Maynards Ltd, London	No response
618	Morris Ashby Ltd, London	No response
619	National Plastics Ltd, London	No response
620	Patterton International Ltd, London	No response
621	R H M Foods Ltd, London	Refusal
622	Rael-Brook Ltd, London	No response
623	Redifon Telecommunications Ltd, London	No response
624	S C M (UK) Ltd, London	No response
625	J H Sankey & Son Ltd, London	Moved
626	Selincourt Ltd, London	No response
627	G Brady & Co Ltd, Manchester	No response
628	British Electrical Repairs Ltd, Manchester	No response
629	The Carborundum Co Ltd, Manchester	No response
630	The Clayton Aniline Co Ltd, Manchester	No response
631	Louis C Edwards & Sons Ltd, Manchester	No response
632	G E C Switchgear Ltd, Manchester	No response

APPENDIX 12

THE CONTROL GROUP OF LARGE NON - DOMINANT PLANTS

LLM SERIAL NO	COMPANY	LOCATION	M L H	EMPLOYEES IN PLANTS	OWNER-SHIP	REGIONAL CODE
402	Ferranti Ltd	Edinburgh	367 IX	6000	2	1
403	Carron Ltd	Falkirk	399 XII	1345	4	1
405	India Tyres Ltd	Glasgow	491 XIX	1106	4	1
425	Automotive Products Ltd	Liverpool	333 VII	1093	4	4
432	Gullich Dobson Ltd	Wigan	339 VII	1665	4	4
435	Redfern National Glass	Barnsley	463 XVI	1672	4	5
449	Elida Gibbs Ltd	Leeds	273 V	922	4	5
452	Austin Morris Castle Bromwich	Birmingham	381 XI	7532	2	6
470	Tubes Ltd	Birmingham	312 VI	1082	4	6
480	Imperial Metal Industries	Birmingham	322 VI	5966	1	6
489	W. T. Avery	Smethwick	339 VII	1886	4	6
500	Rolls Royce Motors	Shrewsbury	334 VII	2904	2	6
515	GEC Eliot Process Automation	Leicester	361 IX	1229	4	7
516	Marconi Rader Systems Ltd	Leicester	367 IX	1182	4	7
524	British United Shoe Machinery	Leicester	335 VII	2500	4	7
530	Express Lift Co	Northhampton	337 VII	959	4	7
534	John Player	Nottingham	240 III	5538	4	7
545	Lawrence Scott & Motors	Norwich	361 IX	1358	4	8
546	Boulton & Paul Group	Norwich	217 III	4143	4	8
572	Mars Ltd	Slough	217 III	3760	3	9
576	Woods of Colchester Ltd	Colchester	368 IX	1386	4	9
590	Rolls Royce	Watford	383 XI	3266	2	9
593	Sun Printers	Watford	481 XVIII	1800	4	9
599	Daks Simpson Ltd	London	442 XV	1115	4	9

Note : (i) OWNERSHIP CODES

1. State Owned
2. Quasi State Owned
3. Foreign Owned
4. UK Owned.

APPENDIX 13

LLM EFFICIENCY : DATA COLLECTION AND INTERPRETATION

1 DATA COLLECTION: METHODS AND AVAILABILITY

Testing the hypotheses relating to LLM efficiency involved gathering data on both registered unemployment and vacancies at an appropriately disaggregated level. In addition data on the number of LLM employees was also collected so that the rate of unemployment and vacancies could be calculated, and as a result direct comparisons of performance and behaviour could be made between LLMs.[1] For statistical reasons the data collected, with some minor exceptions, was restricted to adult males since these figures are less susceptible to pressures exerted by seasonal and cyclical fluctuations or non-economic considerations.[2]

---

(1) That is, by calculating the unemployment and vacancy rates it is possible to control for LLM size.

(2) One minor exception to this is that since early 1974 youths under 18 have had the option of registering for employment with the Employment Office (EO) or the Careers Office (CO) and this has meant that since that date instead of distinguishing between men and boys the data differentiates between the EO and CO registrations. This division is not the same as the previous 18 year old dividing line but is similar. The important point is that it is highly probable that the propensity for youths under 18 to register at the employment office is not systematically related to differences in the structure of LLMs. The notification of vacancies has been affected in the same way as the registration of unemployment with the current distinction now being between EO and CO vacancies rather than adult and juveniles. A second minor exception concerns the treatment of the totally unemployed. Between 1951 and 1971 the "wholly unemployed" had to be derived by subtracting the number of temporarily stopped from the total register. In some areas, however, there was no distinction between adult and juvenile temporarily stopped registrations and therefore the total figure had to be subtracted. This is a relatively unimportant problem since in most areas the temporarily stopped are only a small proportion of the total register. Furthermore the proportion of the temporary stopped who are youths is also very small.

This is especially true of the unemployment figures where although the registration rate for males approaches 100%, and is relatively stable, the figures for females is subject to a variety of pressures which vary both geographically and cyclically.[(3)] Statistics covering youth unemployment are also subject to similar problems as well as being prone to wide seasonal variations caused by school leavers coming onto the register, and the increasing number of students registering as unemployed although the latter practice has now ceased. Therefore, focussing on employment figures for adult males provides a more realistic and precise interpretation of LLM bahaviour and the economic pressures affecting LLM performance.

To ensure that each LLM UV equation was estimated accurately it was important to have as many compatible observations as possible for each of the three variables. Allied to this since the estimates of the UV curve will be enhanced by having values of unemployment, vacancies and employees over a wide range of demand conditions it was essential to collect the data over a relatively long period. Bearing in mind these considerations, it was decided to gather 100 quarterly unemployment and vacancy observations covering the period 1951-1975. Unfortunately, it was not possible to collect similar data on employment since estimates are only available on an annual basis. Consequently and as a proxy, it was decided to collect 25 yearly figures over the same time period and use these figures to estimate the unemployment and vacancy rates for the 100 observations.[(4)]

---

(3) The General Household Survey showed that in 1972 52% of women who said they were looking for work were not registered as unemployed compared to only 9% of men. This is largely because female registration does not provide the same benefits as male registration, and therefore there is no similar incentive to register unless the Department of Employment is considered to be an effective method of finding work.

(4) Although this introduces some measurement error into the unemployment and vacancies rate calculations the variations in the annual employment statistics were generally small and any resultant impact on the unemployment and vacancy rate were probably insignificant. The procedures adopted for LLMs where there were significant jumps in the employment series are discussed below.

TABLE A13.1 REGIONAL BREAKDOWN OF AVAILABLE UNEMPLOYMENT VACANCY AND EMPLOYEE DATA.

	Unemployment		Vacancies		Employees	
	No of Observations	Time Period	No of Observations	Time Period	No of Observations	Time Period
SCOTLAND	100	1951-1975	100	1951-1975	10	1966-1975
Rogue Cases						
Glasgow	92	1951-1973	100	1951-1975	10	1966-1975
WALES	88	1954-1975	100	1951-1975	21	1955-1975
Rogue Cases						
Aberdare	87	1954-1975	83	1955-1975	0	-
Carmorthen	88	1954-1975	92	1953-1975	21	1955-1975
NORTHERN	100	1951-1975	100	1951-1975	15	1961-1975
NORTH-WEST	100	1951-1975	100	1951-1975	25	1951-1975
YORKSHIRE - HUMBERSIDE	100	1951-1975	100	1951-1975	24	1951-1974
Rogue Cases						
Louth	0	-	0	-	0	-
Gamaborough	0	-	0	-	0	-
Skegness	0	-	0	-	0	-
WEST MIDLANDS	100	1951-1975	100	1951-1975	23	1953-1975
Rogue Cases						
Dudley Warley	100	1951-1975	100	1951-1975	24	1952-1975
EAST MIDLANDS	100	1951-1975	100	1951-1975	25	1951-1975
EAST ANGLIA	66	1957-1975	100	1951-1975	19	1957-1975
and	62	1958-1975	100	1951-1975	18	1958-1975
Rogue Cases						
	68	1959-1975	100	1951-1975	17	1959-1975
MARCH	68	1959-1975	68	1959-1975	17	1959-1975
SOUTH WEST	98	1951-1975	100	1951-1975	24	1952-1975
and	72	1958	72	1958-1975	21	1955-1975
Rogue Cases						
Bridefort	72	1958-1975	76	1957-1975	18	1958-1975
Sherhome	72	1958-1975	72	1958-1975	18	1958-1975
St Ives	98	1951-1975	98	1951-1975	0	-
SOUTH EAST	100	1951-1975	100	1951-1975	25	1951-1975
and	76	1957-1975	100	1951-1975	19	1957-1975
and	72	1958-1975	100	1951-1975	18	1958-1975
and	68	1959-1975	100	1951-1975	17	1959-1975
Rogue Cases						
Bournemouth	64	1957-1975	64	1957-1975	19	1957-1975
Poole	64	1957-1975	64	1957-1975	19	1957-1975
Andove	100	1957-1975	100	1951-1975	19	1957-1975
Luton	98	1951-1975	98	1951-1978	25	1951-1975
Seven LLM with no EMPL figs.	100	1951-1975	100	1951-1975	0	-

Having decided on the data requirements the statistics were gathered on a local office basis and subsequently aggregated to match the LLM areas as previously defined and set out in terms of Local Authority areas (see Appendix 1). In practice this technique presented few problems since Department of Employment local office areas were often coterminus with local authority areas. Even where there were boundary problems these were generally restricted to rural areas and the mismatches were rarely sufficient to significantly influence the unemployment and vacancy figures.[5] However, in areas where there were significant boundary problems the offending LLMs were dropped from the UV analysis.

In practice the unemployment, vacancy and employee data was collected from the Department of Employment's ten regional offices.[6] In most cases the records kept by the Department of Employment were fairly comprehensive, as Table A13.1 shows, with only fairly minor interruptions in the time-series over the period 1951-1975. Nonetheless, in some cases the data deficiences were more severe and widespread. The main deficiences were concentrated in Scotland, Northern Region, and East Anglia where there were large gaps in the early data on employees and the unemployed. This meant that it was not possible to calculate the early UV ratios for the LLMs in these regions. Appart from data deficiencies common to complete regions there were also deficiencies in a few LLMs in regions where the data was otherwise relatively complete. For example, in Louth, Gainsborough and Skegness no data was available prior to 1970.

There were no systematic explanations of why data was missing at either a regional or local level. In most cases the only reasons offered were that the information had been destroyed, mislaid or, more infrequently, not collected because of industrial action.

---

(5) That is, the majority of these rural cases were characterised by large overbounded Employment Exchanges with the bulk of the population and the workforce concentrated in the single urban centre.

(6) This data collection exercise was undertaken as part of the parent project and was not only used for the UV analysis.

Occassionaly some available data has to be disregarded because of an administrative failure to distinguish between males and females, and between youths and adults in some of the earlier records which meant that it was not possible to derive accurate figures for adult males. Despite the problem of an incomplete data base there were still more than sufficient observations to calculate UV equations for most of the LLMs, although when making comparisons between areas it should be remembered that the time-series covered did not match exactly.(7) In most cases missing data will be relatively unimportant: for example since LLM behaviour has in the past had as important cyclical component then it is likely that the economic conditions in the LLM will be repeated and hense the UV curve will to some extent retrace previously missing areas of the curve.

2 INTERPRETATION OF THE DATA

Although it is generally possible to gather a sufficient quantity of data on unemployment, vacancies and employees to accurately estimate a UV equation for each LLM it is important to recognise the possible shortcomings associated with official data and the circumstances under which it is gathered. In particular, it is important to recognise that apparent differences in LLM behaviour may be caused by statistical biases and measurement errors rather than economic forces. This section examines possible data deficiences and subsequently considers how best to overcome the problems and therefore reduce the danger of statistical anomalies conditioning the empirical analysis and resulting in potentially misleading inferences and conclusions.

---

(7) The final number of observations used to calculate each UV regression was the time-period where data was available for all three variables. Therefore, if different observations were missing for each of the time-series then the overall problem becomes more serious.

2.1 The Unemployment Series

Unemployment figures provide perhaps the most reliable component of the data base in that they are only subject to relatively minor shortcomings. As a result they are a reasonably acurate measure of labour supply at the LLM level. Nonetheless, one of the potential problems associated with unemployment is that registration may fall below 100%. However, because of the benefits associated with registering as unemployed it is unlikely that many adult males do not register.[(8)] Moreover, most of the unregistered unemployed will tend to be workers who, for a variety of reasons, expect to find a job relatively quickly. Therefore if they remain unregistered the short duration of their period of unemployment will have little impact on the total unemployment figure.[(9)]

Another more serious problem associated with the unemployment figures is the treatment of the temporarily stopped (TS) in the register. The reported unemployment figures reflect a count on a particular day, and therefore the figures recorded for the TS will be highly sensitive to the particular pattern of short-term working in the area. As a result there is no guarantee that the observed TS figure accurately reflects the real level of TS in the LLM. To help overcome this problem a more appropriate measure would be to count the number temporarily stopped in an area irrespective of whether they are working on that day. However, it is impossible to estimate the TS figure from the available data in this way and therefore it was decided to exclude the TS from the unemployment statistics used to estimate the UV relationship.

---

(8) See footnote 3.

(9) Although Evans (1977) has reported some elements of regional variation in unemployment registration, this may only reflect the level of demand in each area and differences in the expected duration of unemployment leading to variations in the registration rate. That is, controlling for demand the net difference in unemployment registration between regions will be minimal.

The absence of satisfactory data on temporary lay-offs is an unfortunate deficiency since several industries and regions seem to have made considerable use of such a device to help minimise the level of redundancies. It appears, for example, that the textile industry in Lancashire made extensive use of such measures in the early 1950s. An examination of the figures for the appropriate LLMs reveals large numbers of temporarily stopped workers, relative to the number of wholly unemployed, and significant fluctuations in these numbers over a short period.[10] Accordingly, the differential use of this mechanism will influence the unemployment rate in a LLM subsequently influencing the UV equation and the associated measure of labour market efficiency. As a result the role played by the TS will have to be kept in mind when offering explanations for observed differences in performance between LLMs. The important point is that differences between areas which appear to be explicable in terms of differences in industrial structure or degree of dominance may actually only reflect differential use by local employers of work-sharing devices. Therefore, it will be important not to jump to attractive explanations of LLM behaviour before considering the more mundane possibilities.[11]

The nature of the possible bias caused by the non-availability of a proper measure of the TS is a difficult problem to resolve since statistically it is not possible to isolate and measure the impact of this type of behaviour.[12] However, a number of possibilities exist whereby the extent of the bias may be reduced.

---

(10) In Nelson, for example, unemployment rose from 8 in the summer of 1951 to 280 a year later. During the same period the number of temporarily stopped increased from a negligible number to over 2000.

(11) It may be that dominant plants as a group will favour the use of work sharing and similar measures by recognising the important impact any redundancies it declares will have on the LLM. If this is the case then they may be particularly difficult to distinguish between real and statistical differences in these LLMs.

(12) Moreover, there is little available evidence on whether the use of TS follows any systematic pattern or is influenced by any particular variables.

One partial solution would be to analyse the available data on a regional basis since this will effectively control for a part of the spatial variations in the pattern of using TS and therefore may help reduce the significance of any bias.(13) Similarly the TS problem can be reduced by restricting the analysis to areas where the demand for labour is traditionally high and the extent of TS is correspondingly low. In practice this would probably involve excluding Scotland, Wales, Northern Region, the North West and Yorkshire Humberside from the analysis which is approximately 50% of the total sample. Adopting this approach it should then be possible to in part identify the significance of the TS effect by comparing the level of U* and B between regions for each type of LLM.(14)

Apart from a minor registration problem and the possible biases caused by differential use of work sharing methods there are no other shortcomings associated with the unemployment data. Therefore, as long as sufficient care is taken when using the series the data should be adequate when estimating the UV regression equations.

2.2 The Vacancy Series

Although the problems presented by the unemployment data are limited both in number and severity the same may not be true for the vacancy series. In this case the data has to be analysed with care before confident predictions can be derived on how the characteristics of the LLM influence the statistics. It must be

---

(13) However, given the hypotheses under test controlling for inter-regional variation in the use of TS will not be of paramount importance.

(14) If plant and industry dominated LLMs were less likely to favour work sharing and similar practices it may have been possible to ignore the impact of TS. If the observed U* and B statistics were lower in these LLMs then it would have been possible to say that the impact of the LLMs structural characteristics had overcome statistical pressures operating in the opposite direction. However, in this case both aspects of behaviour operate in the same direction so this is not possible.

remembered, however, that despite the shortcomings associated with the vacancy series this statistic is the only broadly compatible and readily available source of data on labour demand, as a result it is an integral part of the measures of LLM efficiency used in the empirical analysis. Accordingly, it is important to systematically consider the most effective way of using the data and how to at least try to overcome the problems inherent in the series.

One of the fundamental problems with the vacancy data, and the drawback which makes it significantly more difficult to interpret than the unemployment figures, is that in general the vacancy statement ratio falls well below unity. That is, only a limited proportion of total vacancies are notified to the Department of Employment. This aspect of vacancy behaviour is well established and reflects the costs and benefits associated with notifying vacancies. One particular reason for this behaviour is that it is possible to recruit workers through a series of overlapping channels and there is no need to rely exclusively on placements by the Job Centre.(15) (16) The fact that there is no legislative or administrative requirement to notify vacancies also helps explain why the statement ratio is relatively low.

The low vacancy rate is not in itself an important problem since if the shortfall could be accurately and consistently estimated a correction factor could be built into the UV equation. Unfortunately, however, the picture is more complicated than this since vacancy registration is influenced by a number of different

---

(15) See the discussion on recruitment in Chapter 2 and Chapter 3. For general evidence on the extent of vacancy notification see MacKay et al (1971).

(16) The extent of under-notification may be exaggerated since vacancies not notified to the Job Centre seem to be of relatively short duration. Therefore, if vacancy registration was increased substantially then this may only increase the vacancy rate marginally. This view is in part supported by Dow & Dicks-Murreaux (1959) who noted that seasonal and cyclical fluctuations in the vacancy series were similar for periods of both voluntary and compulsory vacancy notification. This evidence was supported by later contributions to the debate and especially Cheshire (1979).

variables which may lead to differences in the notification ratebetween LIMs and between time periods. Naturally any sufficiently large effect of this nature will, in turn, introduce a differential bias into the LIM efficiency estimates and so again threaten to confuse the important distinction between economic and statistical phenomena.

Perhaps the main potentially disruptive influence on the vacancy statement ratio is the level of labour demand in a LIM. Indeed there are several theoretical reasons to suggest that there may be a relationship between demand and the registration rate, and all of these are generally associated with the changing costs and benefits related to notifying vacancies over the cycle. When demand is high and unemployment low, employers will tend to search more intensively in order to attract labour and as a result they may decide to notify a higher proportion of vacancies to the Job Centre. Conversely, when demand falls and unemployment increases the burden of job search will shift to the workers and there will be little need to register vacancies to secure recruits. As a result, the statement ratio will fall under conditions of low labour demand. However, this model of vacany notification is complicated by forces tending to work in the opposite direction. For example, as demand increases employers may feel that the probability of the Job Centre filling a vacancy becomes increasingly remote and, as a result notifing employment opportunities will not benefit the firm. Similar logic suggests that as unemployment increases firms may decide that the Job Centre is more likely to fill a vacancy, and therefore the registration rate will rise in the downturn. Which of these two arguments is the strongest cannot be decided theoretically, and unfortunately the limited empirical evidence offers little guidance. For example, on the one hand there is the evidence of Mackay <u>et al</u> (1971) which notes significant differences in the rate of vacancy notification for two areas experiencing different levels of demand, whilst on the other hand there is the work of Dow & Dicks-Murreaux (1959) which shows that the rate of vacancy notification parallels that of unemployment registration which is not subject to major cyclical changes.

Although it is difficult to say with any precision whether there is a cyclical element in the vacancy series due to variations in notification policies this may not be of major importance to the research. Even if there is a bias it will not differentially affect the calculations of the measures of LIM efficiency as long as the bias is the same for all LIMs. That is, whilst changes in the rate of notification may occur throughout the economic cycle, and this will influence the position of the UV curve, it will not change the expected ranking of the efficiency measures for the categories of LIM under observation. The only exception to this will be LIMs where economic conditions have remained stable under the period of observation. Under these circumstances the calucalation of the UV regression will be based on a narrow spread of data and the derived measures of efficiency will be biased accordingly. To offset this danger it will be necessary to control for this problem in the empirical analysis.

Another possible influence on the propensity to register vacancies may be plant dominance. This will tend to happen if these quasi-monopsonistic establishments are either viewed as the focus of LIM activities, or because the plants develop a special working relationship with the Job Centre as a direct result of their importance to the local economy. Unfortunately, it is difficult to predict any systematic relationship between plant dominance and vacancy registration since there are again a number of influences affecting a plant's policy. Moreover, many of these may be based on custom and practice reflecting the unique position of the individual plant rather than broader based considerations. The only available evidence on this aspect of vacancy registration comes from the questionnaire analysis which indicates that registration rates tend to be relatively high in dominant plants. This in some part supports earlier suspicions.(17) Nonetheless, if this is the case it may not present a problem when testing the original hypothesis on

(17) This may reflect the tendency for labour shortages to appear in these LIMs because of the supply inelasticities faced by the monopsonistic plant.

dominance since this predicts that the UV curve will be closer to the origin relative to non-dominated LLMs. That is, if the hypothesis holds it will be despite variations in dominant plant registration rates moving the UV curve outwards.(18)

Finally, it is possible that there will be variations between industries in the rate of vacancy notification.(19) For instance, some industries may rely almost exclusively on informal recruitment methods when hiring, whereas others may prefer to operate through Job Centres.(20) However, as the evidence on inter-industry variations in the propensity to notify vacancies is almost non-existant it is difficult to derive any firm conclusion on how best to either measure or subsequently control for this problem. Consequently, when analysing the empirical results, it is only possible to mention rather than quantify that part of the explanation of any observed differences may reflect industrial biases in the statement ratio. Nonetheless, any such bias is likely to be insignificant when measured across a range of industries, hense it is unlikely to influence the hypotheses under test.(21)

---

(18) Although the evidence is far from comprehensive, Beaumont (1976) found that several major plants registered vacancies by standing order. In the system operated by Job Centres standing orders often count as one vacancy and as a result job opportunities in the LLM will be underestimated and the UV curve will be biased inwards. Unfortunately, without more detailed evidence on this it is difficult to quantify how important this problem is and therefore take it into account when considering the empirical results.

(19) Note that the presence of TS may confuse the issue: see footnote 14.

(20) The industry effect may in fact reflect an occupational or skill effect.

(21) Other less tangible factors will also effect vacancy registrations including the local Job Centre's image and efficiency, and even the perceptions and policies of the LLMs leading personnel managers. However, it is not anticipated that these factors vary systematically between LLMs. Therefore they will not influence the overall results of the study.

Summarising the problems of the vacancy series it appears that although the data is subject to a range of imperfections which combine to reduce its reliability as a measure of demand there is evidence to suggest that the data collected remains a sufficiently good proxy for demand to meet the study's requirements. Moreover, in circumstances where biases remain, for the purposes of the research it will be possible to at least partly control for many of the problems.

2.3 The Employee Series

The employee series also has its shortcomings, although for the most part these relate to data availability and compatability rather than the more complex and subtle problems associated with the unemployment and vacancy series.(22) One of the data problems with the employee series concerns the absense of quarterly estimates and the subsequent reliance on yearly figures interpolated to provide 100 observations. Although this process inevitably will introduce an element of imprecision to the calculation of the unemployment and vacancy rates the effect is likely to be marginal and should not significantly bias the results. A second, and related, problem concerns the absense of employee data for the years 1974 and 1975. Again for pragmatic reasons it was decided to estimate the figures for the two year period and hence the 1975 estimate was used to derive the eight outstanding observations. This procedure is unlikely to materially affect the results as the inter-year variation in LLM employees was generally very small.

A more serious problem in the employee figure arose from the large jumps which occasionally appeared in the series at the LLM level. Indeed in some areas there appear to be annual changes in the number of employees which can only be accounted for by some changes in the basis of the compilation of the figure. Accepting

(22) For a detailed survey of the problems faced in the employee series see Allen and Yuill (1975).

this it seems that the most likely explanation of these large jumps is a change in the location of the workforce attributed to some employers in the area.[23] Such problems with the employment series will have a critical impact on the calculation of the unemployment and vacancy rates, and therefore have to be taken into account before estimating the UV equation. Unfortunately there is no way these changes can be satisfactorily incorporated into the calculation given the data available from the Department of Employment. Furthermore, it is not possible to take account of these variations indirectly through the behaviour of other variables. For example, it is very difficult to say whether these problems are getting better or worse over time since they are essentially erratic changes caused mainly by local practices. Given this, the only solution to the problem will be to discard LLMs exhibiting large random jumps in the employee series since this is the only effective method of avoiding unexplained shifts in the UV equation.[24]

Another more general problem with shifts in the employee series occurred in 1971 when the approach to collecting data on employee numbers changed from the Card Count method to data collected by the Annual Census of Employment. In most cases the disparity between the figures is relatively small and only has a marginal effect on calculating the appropriate unemployment and vacancy rates.[25] However, in other cases, and for a variety of reasons the size of the shift was significant and potentially

---

(23) Thus in Ashford, for example, the number of employees dropped from 16,880 to 12,056 between 1951 and 1952. Similar drops in the same period occurred in Maidstone, Brighton and Winchester, whilst rises of the same order can be found in Chatham and Slough and several others. The Maidstone change can almost certainly be attributed to the fact that in 1951 a large number of local authority employees in the education sector were allocated to Maidstone whereas their actual workplaces, as reflected in the 1952 count were outside the Maidstone area.

(24) In some measure the process of estimating UV equations will automatically reject areas with a large shift in the employee series since this type of LLM will not conform to the specification of the equation.

damaging to the estimations of the UV equation. As before there is no means of overcoming this problem with the available data and as a result the offending LLMs have to be dropped from the analysis.

A final major problem with the employee series is that, whereas the registered unemployed refer to men living in a particular employment office area, the employee estimates refer to the number of men working in the area. As a result areas which are job centres will have an artificially low unemployment rate, whilst dormitary towns will be characterised by an artificially high unemployment rates.(26) To some extent this problem is limited because the LLM configurations under review have been selected on the basis of relatively high degrees of self-containment. Despite this, however, many of the LLMs still have significant minorities of residents working outside the area, and workers living outside the area, which may continue to bias the calculation of the unemployment rate and hense the position of the UV curve.

To overcome this problem it may be necessary to restrict the analysis to LLMs with high levels of self-containment, and therefore leave the unemployment rates free from the problems caused by cross boundary flows. Unfortunately, implementing this control means that it will no longer be possible to test whether self-containment itself influences the position of the UV curve through real economic pressures as suggested in Chapter 6. However, given the existence of such a bias in the unemployment rate this would not have been possible anyway. As an alternative to this problem it should be possible to establish whether any of the LLM characteristics under

---

(25) See Allen and Yuill (1975) for a detailed explanation of the problems involved.

(26) The importance of this problem will also change over time due to alterations in journey-to-work patterns. However, since these changes only occur very gradually and are unlikely to effect the basic direction of well established flows and therefore alterations to journey-to-work patterns are assumed to be of insignificant importance.

review are systematically related to the level and nature of self-containment. If there is no relationship then there will be little need to carefully control for the problem when analysing LLM performance. Similarly, if the average unemployment and vacancy rates are not statistically different for dormitary towns and job centres, and this does not appear to be as the result of an intervening variable, then it will be possible to conclude that the impact of self-containment on unemployment rates is marginal. This last approach may be especially useful since if there is no difference between the respective average unemployment and vacancy figures it will be possible to test whether high self-containment influences the UV curve without worrying about possible statistical biases disrupting the analysis.

3. CONCLUSIONS

Table A13.2 summarises the principal drawbacks associated with the unemployment, vacancy and employee time series. The table also shows the anticipated significance of the data inadequacies and the possible methods of overcoming the problem. From the table and the previous discussion it appears that some of the data problems may be dismissed because their impact is either insignificant or because the bias generated will not affect the specific hypothesis under test. Nonetheless, there remain several shortcomings associated with the data which still threatens to disrupt the analysis of LLM efficiency. Moreover, it is very difficult to quantify the possible impact of these problems since there has been a marked lack of adequate and systematic research on the subject. The most serious problems occur when the data problems are correlated with the hypotheses and variables under test with the result that it is very difficult to accurately separate statistical phenomena from real economic pressures.

To be more positive, even if these more serious data problems exist it should still be possible to avoid the more obvious pitfalls associated with them by carefully structuring the empirical analysis to take account of the biases. In particular, this may result in the analysis being organised on a regional basis or controlling for the level of unemployment. Allied to this where there are severe problems relating to the available data the offending LLMs should be discarded. Adopting this more focused approach should help overcome the most fundamental problems associated with the data set. However, and even allowing for these possible correction factors, residual data problems may remain. Therefore, where necessary conclusions based on the LLM statistics should be appropriately qualified.

APPENDIX 14

A CLASSIFICATION OF UNEMPLOYMENT AND ITS RELATIONSHIP TO THE UV ANALYSIS

An aggregate unemployment figure may be broken down into three component parts; frictional unemployment (Uf), structural unemployment (Us), and demand deficient unemployment (Udd). As is shown below each component relates to the cause of unemployment and in turn suggests how such unemployment may be eliminated.[1]

> Frictional Unemployment represents the total number of employees for whom a suitable vacancy exists. That is, the frictionally unemployed are workers who possess the right characteristics to fill a specific job vacancy but for some reason have not secured employment.[2] As a result for any industry the frictionally unemployed are either the number unemployed or the number of vacancies, which ever is the smaller. The total Uf for a LLM is the sum of Uf across all industries.[3]

---

(1) Both Us and Uf may be defined as the two components making up non-demand deficient unemployment (Udd).

(2) One of the major causes of frictional unemployment is the lack of adequate labour market information. It is widely recognised (for example, see Chapter 2 & Chapter 3) that there are severe limits to the job knowledge possesed by the labour force and job seekers. The typical worker has little knowledge of the full range of jobs, wage rates and working conditions prevailing in an area. In particular, since the job seeker often acquires information through a restricted circle of friends and relatives and is not able to avaluate more than a few vacancies, or assess detailed information on any specific opening. Employers will also face seriously imperfect information and will be unable to judge accurately and quickly the calibre of job applicants. Consequently, and as a result of these imperfections in information, it will take time to fill a job vacancy and hence frictional unemployment will develop.

(3) Although Uf is defined in terms of industry it could equally well be measured in terms of occupation. The methodology and the end results are the same and indeed this is the approach adopted in Chapter 6.

Structural unemployment relates to a mismatch between the characteristics of the unemployed and the available vacancies. Whenever there is structural unemployment the unemployed can only secure employment by changing industries which may be prohibitive because of the costs and time involved. In more abstract terms the level of Us varies depending on whether Ut is greater than Vt, where Ut and Vt are respectively the total number of unemployed and vacancies in the LLM. If the total number of vancies is greater than the total unemployed, then structural unemployment equals $\Sigma(Ui-Vi)$ for all industries where $U > V$[4] That is, all the non-frictional unemployment must be structural since total vacancies exceeds total unemployment. Where Vt is less the Ut, then Us equals $\Sigma(Vi-Ui)$ for all industries where V is greater than U. Only where vacancies in a specific industry exceed unemployment in that industry and Ut exceeds Vt is there any structural unemployment.

Demand deficient unemployment is the simplest to define since it represents the excess of total unemployment over total vacancies. Demand deficient unemployment, therefore, measures the number of workers for whom no vacancies exist under any circumstances.[5] [6]

---

(4) The subscript i stands for industry.

(5) For more details on the classification of unemployment see Hughes (1974).

(6) One problem with this unemployment breakdown is that the relative importance of the unemployment categories tend to be related to the size of the area under examination. For example, although a region may have a match between unemployment and vacancies, geographical immobilities within the area may prevent the worker accepting otherwise favourable employment. At the other extreme in small LLMs there may be a high proportion of Us because there may be a lot of unemployed for whom there are jobs in there own industries in other areas, but who in relation to the opportunities in their own area have the wrong skills. As a result of these considerations the extent of Us and Uf may be changed by altering the boundaries of the LLM.

When using this "causal" classification of unemployment it is important to recognise that the relative size of the unemployment components fluctuate with labour demand. At one extreme when demand is very low, and therefore unemployment very high, $Ut - Vt = Ut$, because $Vt = 0$. In this situation all unemployment is demand deficient as there are no vacancies. However, as demand increases vacancies will begin to appear as a result of LLM imperfections. Hence over time an increasing number of vacancies will remain on the unemployment register thereby marking the appearance of frictional unemployment. The growth in frictional unemployment will tend to offset the decline in total unemployment. Nonetheless, under normal circumstances total unemployment will continue to fall since increased labour demand will not be reflected exclusively in an increased level of vacancies. Further increase in demand will tend to lead to vacancies exceeding the number of unemployed in selected industries which signals the appearance of structural unemployment (that is $Vi > Ui$ for some industries).

If demand continues to increase, eventually the LLM will reach the point $Ut = Vt$ where Udd is zero and the remaining unemployment is a combination of Us and Uf. If demand continues to increase Us will cease to exist when vacancies are greater than unemployment in every industry. Frictional unemployment will disappear only when unemployment falls to zero. Recognising the impact of demand changes on the classification of unemployment indicates that simply by measuring the separate components of unemployment at a given level of demand and implementing policies to cure each contributory factor will not solve the unemployment problem. Instead the importance of different unemployment categories would change, and although total unemployment would probably fall, it would decline by less than the original estimate.

APPENDIX 15

STATISTICAL CONSIDERATIONS RELATING TO THE ANALYSIS OF THE UV REGRESSION EQUATIONS

To test the hypotheses relating dominance to LLM efficiency this Appendix first considers how best to analyse the LLM based UV data bearing in mind the shortcomings inherent in the data set (see Appendix 13) and the time and resource constraints facing the study. Besides examining the basic statistical issues the Appendix also examines the underlying properties of the UV equations generated by adopting the recommended econometric approach and subsequently discusses the implications these results have for testing the hypotheses outlined in Chapter 6.

1 THE ECONOMETRIC APPROACH TO TESTING THE LLM BASED HYPOTHESES

Although the hypotheses under test are relatively straightforward it is important to recognise the statistical and econometric constraints facing the investigation since these serve to compound the already significant data problems inherent in the unemployment, vacancy and employee series. (1) (2) Failure to explicitly recognise these dangers and structure the analysis accordingly would almost certainly result in potentially misleading conclusions based on a misinterpretation of the available data. It is important, therefore, to select the most appropriate statistical methods in order to at least tentatively identify whether there are any relationships between LLM efficiency and the characteristics of the market.

---

(1) One of the main shortcomings of previous UV work has been their failure to recognise the inadequacies and potential biases in their empirical work. As a result many of their conclusions must be heavily qualified. This, in particular, applies to Thirwall (1969) and Cheshire (1979) where the problem of autocorrelation seems so severe.

(2) For a more detailed examination of the problems associated with applying statistical techniques to complex LLMs see Warren (1977), Holden and Peel (1975), and Bowden (1980).

The first key point to bear in mind is that the underlying objective of the research is to relate specific LLM characteristics to LLM efficiency as measured by the relationship between unemployment and vacancies. However, since the measures of LLM efficiency are exclusively based on the equation Log U=Log A + Blog V(in that this equation measures the distance of the UV curve from the origin of the UV axis) it is not possible to simply expand the functional form of the equation to include these additional variables. (3) That is an equation of the form;

$$\text{Log } U = \text{Log } A + B \text{ Log } V + D1 + D2 + D3 + CS$$

(where D1 - D3 are dummy variables relating to particular characteristics of the LLM and S represents, say LLM size) would not be compatible with the two dimensional measure of LLM efficiency.

As a result it is necessary to adopt a more simplistic approach to the problem. For every LLM it was decided to estimate the standard UV equation Log U = Log A + Blog V. Using the coefficients generated by this model the measures of efficiency outlined previously can be calculated. It is then possible to test whether the variation in the measures are related to the characteristics of the LLM. (4) Having decided that the most appropriate approach to testing the hypotheses under examination was to run the Log U = Log A + Blog V equation, the next step was to decide on the most appropriate estimation technique. To reiterate in more detail the model under examination is the form :

$$\text{Log } U_{it} = \text{Log } A_i + B_i \text{ Log } V_{it} + E_{it} \ldots\ldots (1)$$

where i = 1,.....N denotes the LLM and t = 1, where T refers to the time period. In order to obtain separate estimates for $\hat{A}$ and $\hat{B}$ for each LLM it is necessary to estimate the set of equations given below.

$$\left.\begin{array}{l} \text{LLM } 1 : \text{Log } U1t = \text{Log } A1 + B1 \text{ LOG } V1t + E1t \\ \text{LLM } 2 : \text{Log } U2t = \text{Log } A2 + B2 \text{ LOG } V2t + E2t \\ \text{LLM } N : \text{Log } U3t = \text{Log } A3 + B3 \text{ LOG } V3t + E3t \end{array}\right] \quad (2)$$

(3) See Chapter 6 for a full explanation of the measures of efficiency.

(4) Not surprisingly this approach has a number of shortcomings and these are discussed in more detail below.

The set of equations given in (2) can be estimated either by ordinary least squares (OLS) or by generalised least squares (GLS). The latter method when applied to this type of equation system is known as Zellner's "Seemingly Unrelated Regression Estimation" (SURE). [5] To obtain the GLS estimates each equation in (2) is estimated separately by OLS. The residuals, Et, from these regressions are then used to calculate :

$$s_{ij} = \frac{1}{n} \underset{\sim}{e}'_i \underset{\sim}{e}_j \ldots\ldots \qquad (3)$$

The GLS estimators $\hat{B}_{GLS}$ are then obtained from :

$$\hat{\underset{\sim}{B}}_{GLS} = \left[X'(S^{ij} \otimes I_n)X\right]^{-1} \left[X'(S^{ij} \otimes I_n y\right] \ldots\ldots (4)$$

The GLS estimates as asymptotically more efficient than the OLS estimates. However, in small samples, as in this exercise, it cannot be said that using GLS would neccessarily improve the effiency of the estimation procedure.

It is important to be clear about the likely effect of using the simple technique on the properties of the estimates. Both GLS and OLS estimates are unbiased assuming E (eit) = 0 for all i. In an infinite sample GLS would be more efficient; in samples of the size used in the study it is quite possible that GLS estimates will be more efficient but this is not necessarily true.

Given the absence of the neccessary Monte Carlo evidence, the greater computational cost of the GLS estimation and because it was felt that the cross correlation in the errors were likely to be small it was decided that OLS was the most practical estimation method. Another advantage of using OLS is that the results can be more easily compared with earlier studies which used this estimation method. [6]

---

(5) See Zellner (1962)

(6) All the OLS equations, when run, should be corrected for autocorrelation since this was a severe problem in previous studies. For a full explanation of the problems associated with autocorrelation and the Cochrane Orcutt correction method, see Johnson (1972). The important point to note is that autocorrelation leads to biased estimating of sampling variances and hence standard errors and t statistics are incorrect.

Estimating the efficiency measures on a LLM basis and in the most simple functional form potentially introduces several econometric weaknesses which have to be taken into account if the results are not to be misinterpretted. One important shortcoming of the adopted approach is that if the value of the $\hat{B}$ Coefficient can be explained in terms of other variables, which ideally should have somehow been included in the regression equation (see above), then the resultant $\hat{B}$ estimates may be biased and the standard errors may be misleading. Another problem is that using this simplified functional form it will be impossible to accurately distinguish between the variation of the $\hat{B}$s caused by the structural characteristics of the LLM and the random "white noise" variation associated with estimating the coefficient. Finally, and related to the previous point, since the $\hat{B}$ and the derived U* measure are estimates it is not really possible to compute statistical tests of significance between the different categories of LLM [7] [8].

The only way of partly overcoming the statistical problems inherent in the adopted eitamation technique is to test the dominance hypotheses whilst controlling for other potential influences on LLM efficiency. Adopting this approach makes it possible to remove some of the variation in the efficiency measures and therefore identify more accurately any systematic relationship between dominance and efficiency. Two important variables which can easily be controlled for are region and unemployment. This should be borne in mind in the empirical analysis.

(7) That is, it may be theoretically possible to compute statistical differences, but the techniques involved are well beyond this research.

(8) The nature of these statistical problems to some extent also restricts the nature of the LLM hypotheses under test. That is, the crude statistical techniques available can only tend to identify the more general propositions related to LLM performance. Luckily the hypotheses under test are relatively fundamental and therefore suited to the more simplistic approach.

THE STANDARD UV EQUATION RESULTS : GENERAL OBSERVATIONS AND IMPLICATIONS FOR ANALYSIS

The individual LLMs under study cover a wide range of labour market types and incorporate areas with considerable variation in size, industrial structure, self-containment, growth, unemployment, and many other interrelated economic and social characteristics. As a result there will tend to be substantial differences in the extent to which the standard UV equation explains the relationship between these two variables in the LLM. That is, a UV regression with only one independent variable may be significantly under-specified and, to properly explain variations in unemployment, several other factors may have to be included to generate a high degree of explanatory power. By contrast such problems will be less severe at higher levels of aggregation where localised economic characteristics and variations become less significant and therefore a relatively straightforward equation may be sufficient to adequately explain the UV relationship. In other words, disaggregated UV measures are more liable to experience significant shifts and jumps in the UV relationship. For example, structural changes will be more in evidence at the local level since the probability of offsetting variations within the LLM area will be lower.

Suspicions that the standard UV equation may fall short of a precise explanation of UV behaviour are to some extent confirmed by Table A15.1 which presents on a regional basis the key measures and statistics associated with the UV equation. As the table indicates there are widespread variations in the results produced by the regression analysis. The extent of these variations are, however, rather suprising with, in several instances, the standard deviation of a variables' mean approaching or greater than the mean

REGIONAL VARIATIONS IN THE STANDARD UV EQUATION'S CHARACTERISTICS

TABLE A15.1

REGION	B COEFFICIENT			CONSTANT A			EFFIC U *			R 2		NO OF OBSERVATION
	AVERAGE	MAX	MIN	AVERAGE	MAX	MIN	AVERAGE	MAX	MIN	AVERAGE	MIN	
Scotland	-0.10	0.25	-0.5	1.54	2.59	0.43	4.55	11.7	1.33	0.68	0.17	31
Wales	-0.10	0.59	-0.30	1.43	2.23	0.58	7.46	67.9	1.63	0.74	0.36	18
Northern	-0.13	-0.02	-0.45	1.64	2.36	0.29	4.95	9.95	1.25	0.80	0.29	27
North West	-0.22	0.35	-0.61	0.96	2.86	-0.16	2.83	12.00	0.88	0.88	0.40	37
Yorks Humberside	-0.25	0.32	-0.57	1.11	5.27	-0.08	4.09	28.8	0.95	0.85	0.14	22
West Midlands	-0.33	-0.11	-0.70	0.53	1.13	0.07	1.57	2.50	1.05	0.90	0.75	22
East Midlands	-0.32	0.02	-0.62	0.54	2.06	-0.69	1.72	4.78	0.63	0.89	0.69	26
East Anglia	-0.36	-0.07	-0.5	0.66	1.05	0.09	1.71	2.7	1.1	0.61	0.14	12
South East	-0.37	0.46	-0.72	0.69	1.74	-0.67	1.87	7.0	0.63	0.74	0.30	55
South West	-0.29	-0.01	-0.53	0.87	1.89	-0.14	2.18	4.40	0.90	0.76	0.36	39
TOTAL	-0.25	0.59	-0.72	0.98	5.27	-0.69	3.08	67.9	0.63	0.79	0.14	289

Notes :

(i) Data missing for 12 LLMs

(ii) The differences between the regional average of the UV equation characteristics are significant at 99% confidence (using an F -test) for; the constant A, the dependent variable B, the value of R2, the Urban Watson statistic, U*, AW RHS itself. [9] Similarly the table also illustrates that some of the regressions produce highly unusual values both for the B coefficient and the constant. In the case of the B coefficient eight are reported as being positive and others lie very close to zero. Equally unusual thirteen of the values calculated for the constant are negative or very close to zero. [10] Although the low level of the average UV equation R^2 is perhaps of more immediate and widespread concern. The average R^2 for the total sample is 0.79 but in some regions this falls below 0.70. Moreover, in several regions the minimum R^2 explains less than 20% of the variation in the unemployment and vacancy statistics [11] [12]

On the basis of these summary statistics there is an argument for establishing a set of criteria or benchmarks to help measure more precisely the extent to which the UV equations match their predicted theoretical specification (that is $U=AV^B$) whilst remaining econometrically well behaved. Bearing in mind the specification of the equation and the nature of the problem being examined the following, albeit subjective, conditions would seem to be appropriate:

(i) the estimated equation should have a Durbin -Watson statistic falling within the acceptable range, thereby confirming that autocorrection has been satisfactorily corrected by introducing the Cochrane Orcutt technique into the estimation of the regression coefficients. If the reported DW value falls outside the acceptable limits the UV equation/..........

---

(9) This is true even controlling for region a variable which probably explains a proportion of the differences.

(10) Note that a marginally negative constant measured in log terms is not, of course, incorrect but values so close to zero must be considered as extremely unlikely

(11) The variation in the value of the DW statistic are markedly lower reflecting the extent of autocorrelation inherent in time-series data, and the success of the corrective technique.

(12) Note that high R^2 should not be expected. It is known that aggregation artificially increases R^2 as the degree of variation to be explained in more aggregated models is lower than in highly disaggregated equations.

equation should be rejected since the estimated coefficients would remain subject to measurement error (13)

(ii) the reported R^2 should exceed 0.75 thereby indicating that the UV specification explains a relatively high proportion of the variation in U through the constant term and the variation in vacancies. The 0.75 level is a subjective cut-off point but nonetheless represents a reasonably liberal break point given that the time-series nature of the data itself probably explain between 40% and 50% of the variation.

(iii) The B coefficient should be statistically significant as this is the only independent variable in the equation and its non-significance would suggest that the specified UV equation does not explain the relationship as suggested by theory and to some extent previous empirical research. Similarly, as the B statistic is one measure of LLM efficiency and forms the basis of others it may be misleading to include non-significant values without some form of qualification.

(iv) the constant term should be statistically significant as this is again an important element of the estimated equation and directly influences the U* measure of LLM efficiency.

---

(13) Unfortunately since the DW statistic contains an intermediate range it will on occassions not be possible to conclusively establish whether or not auto correlation is significant. In practice this will only occur on a few occassions and therefore to help maintain the sample size the UV equations should also be regarded as acceptable. For a full explanation of the DW statistic see Johnson (1972) PP 249 - 254, or Kelejian and Oats (1976) PP200 - 207

Taking account of these considerations Table A15.2 summarises on a regional basis the extent to which the UV equations satisfy each of these conditions. The figures show that in 70% of the LLM regressions the value of R^2 was above 0.75; in 78% of the LLMs the B coefficient was significant; in 55% of the sample the constant was significant; and in over 98% of cases the Durban-Watson statistic fell within acceptable bounds. Noticeably for each of the regressions characteristics the pattern differs significantly between regions. For example, although 70% of the LLMs reported a level of R^2 above 0.75 the figure for East Anglia was much lower at 25% and much higher for the West Midlands at 100%. This pattern is repeated for other variables and suggests that regional variations may be an important element to be examined and controlled for when analysing the determinants of LLM efficiency. (14)

Table A15.3 indicates the principal shortcomings of the estimated UV equation in terms of the previously developed performance indicators. In total, 75% or 216 out of 289 regressions estimated did not meet all the criteria set out above. The most important single shortcoming was the constant term which was insignificant in 101 LLMs, 35% of the total. (15) Taking into account LLMs where the constant was only part of the cause of LLM imperfections the total increases to 122, 56% of all LLMS with shortcomings. A low R^2/.........

(14) This view is confirmed by previous work. For example, see Cheshire (1979)

(15) At first sight this may seem to be a highly unusual result given that the basis of the log equation and the estimation of U* depends on a positive constant term from which an amount is substracted depending on the value of vacancies in the LLM. However, the results reflect the properties of log equations. That is, if the log A terms is insignificantly different from zero then that natural number A equals one and as a result the function $U=AV^B$ becomes $U=V^B$ Note that theoretically this means that all such UV curves pass though the point (1,1) and therefore the UV equations have the same value for U* Under these circumstances it will be difficult to distinguish between LLMs in terms of efficiency. This issue is discussed in more detail in Chapter 6.

TABLE A15.3 CAUSES OF UV EQUATION SHORTCOMINGS

Nature of Failure	Number of LIMs	% of LIMs	Nature of Failure	Number of LIMs	Failure LIMs
R2	52	18%	B	24	8%
R2 + B	15	5%	B + DW	1	1%
R2 + B + A	2	1%	B + DW + A	2	1%
R2 + B + A + DW	0	0%	B + A	10	3%
R2 + A	7	2%	A	101	35%
R2 + DW	2	1%	A + DW	0	0
R2 + B + DW	0	0%	DW	0	0
R2 + A + DW	0	0%	TOTAL	216	75%

A low R^2 was the second most important reason for questioning the applicability of the UV equation since on 52 occassion the R^2 value fell below 0.75, and this featured a further 26 times in conjunction with other problems associated with the equation. The insignificance of the B coefficient was relatively less important as there were only 24 LIMs where the coefficient was insignificant, although offsetting this there were another 30 LLMs where the independent variable was partly responsible for an equation's questionable performance. An inadequate Durbin Watson statistic was the least important shortcoming of the UV equation results which largely reflects the success of the Cochrane Orcutt procedure used to correct for autocorrelation. Indeed in only 5 cases did an inappropriate DW appear in regression results.

In addition to the LIMs failing to meet all the econometric related conditions specified above have to be added LIMS experiencing significant boundary changes and employment shifts since both these problems may seriously distort the UV equation results. [16] The total number of LIMs suffering from the statistical defects are shown in Table A15.4 and Table A15.5 In total there were

---

(16) See Appendix 4 for a list of these LLMs.

TABLE A15.4 SIGNIFICANCE OF THE EMPLOYMENT JUMP

	EXTENT OF SIGNIFICANCE	
	NUMBER	%
INSIGNIFICANT	262	87.0
SIGNIFICANT	39	13.0

TABLE A15.5 EXTENT OF BOUNDARY CHANGES

NATURE OF CHANGE	Number	%
No change	224	74.4
Marginal change	37	12.3
Significant change 1951 - 61	11	3.7
Significant change 1961 - 71	27	9.0
Significant change 1951 - 61 & 1961 - 71	2	0.7
TOTAL	301	100

39 LLMS where the employment jump was significant, and 40 cases were boundary changes were a major problem. Taking account of the overlap between these considerations and earlier qualifications the effect of these additional factors means that a further 20 LLM UV regression results have to be considered as questionable. In total, therefore, of the 289 LLMs where UV data was available 236 (82%) did not meet all the conditions set out above. (17)

One of the reasons why such a high proportion of LLMs fail to meet all these conditions is that there is little

---

(17) That is, the total number of rejected LLMs is 236 once the overlap between LLMs with significant boundry changes and employment shifts is taken into account along with LLMs where it was not possible to run regression because of missing data.

TABLE A15.6 THE RELATIONSHIP BETWEEN R^2 THE SIGNIFICANCE OF THE CONSTANT AND THE INDEPENDENT VARIABLE

	Constant			Independent variable		
	Insignificant	Significant	Total	Insignificant	Significant	Total
R^2 less than 0.75	9 (7.4)	69 (41.3)	76 (26.3)	17 (31.5)	61 (26.0)	78 (26)
R^2 above 0.75	113 (92.6)	98 (58.7)	211 (73.0)	37 (68.5)	174 (76.0)	211 (73)
Total	122 (100)	167 (100)	289 (100)	54 (100)	235 (100)	288 (100)

overlap between the different factors detracting from the overall performance of the UV curve. For example, as Table A15.6 shows, LLMs with an insignificant B or A value are not generally associated with an insignificant R^2. Similarly as Table A15.7 shows, an insignificant B is not generally correlated with an insignificant value of A. The limited/..........

TABLE A15.7 THE RELATIONSHIP BETWEEN THE SIGNIFICANCE OF THE CONSTANT AND THE INDEPENDENT VARIABLE

	B INSIGNIFICANT	B SIGNIFICANT	TOTAL
A Insignificant	14 (26)	108 (46)	122 (40)
A Significant	40 (74)	127 (54)	167 (60)
Total	54 (100)	235 (100)	301

Note : (i) CHI SQ differences significant at the 99% confidence level.

The limited extent of the overlap between the equations' shortcomings suggests that particular LLM characteristics affect the performance of the UV equation in different ways. This, to some extent, is confirmed by the results presented in Table A15.8. In this case figures indicate, for example, that LLMs where the constant is significant are characterised by high unemployment, a relatively low variation in unemployment, and a relatively low number of UV observations. Even from an intuitive point of view this result is not surprising. By contrast, the table also shows that LLMs displaying the same characteristics tend to have an insignificant B coefficient. Therefore, and by implication, LLMs with significant B coefficients are largely associated with LLMs with relatively low unemployment, relatively high fluctuations in unemployment and areas where there is a high number of/..........

TABLE A15.8 SELECTED LLM CHARACTERISTICS AND THE RELATIONSHIP BETWEEN THE PROPERTIES OF THE UV EQUATION

LLM Characteristics	A Insignificant	A Significant	Significance level of differences
Mean U rate	1.64	4.09	
	(0.57)	(2.0)	99%
No of observations	92	76	
	(11.5)	(22.6)	99%
DISP unemployment	0.33	0.24	
	(0.08)	(0.07)	99%
LLM Characteristics	**B Insignificant**	**B Significant**	**Significance level of differences**
Mean U rate	4.21	2.79	
	(2.47)	(1.78)	99%
No of observations	69	87	
	(25)	(17)	99%
DISP unemployment	0.27	0.28	
	(0.08)	(0.09)	NS
LLM Characteristics	**R^2 less than 0.75**	**R^2 above 0.75**	**Significance level of differences**
Mean U rate	4.12	2.67	
	(2.0)	(1.8)	99
No of observations	77	86	
	(23)	(19)	99
DISP unemployment	0.24	0.29	
	(0.07)	(0.09)	99

Note: (1) DISP is a measure of the level of fluctuation in the unemployment rate. See Lever et al 1979.

number of UV observations. [18] In terms of the R^2 values the figures indicate that the higher R^2 values are associated with a high number of observations, greater fluctuations in the unemployment rate, and with low unemployment areas. Once again this is not surprising given the specification of the equation and the econometric properties associated with the regression calculations. [19]

Although it is possible to partly relate the causes of the regression equations' shortcomings to particular characteristics of the UV data this does not overcome the fundamental problem that such a high proportion of UV regressions fail to meet a set of interrelated conditions which could be interpreted as qualifying criteria for subsequently testing the hypotheses relating to dominant plant behaviour. However, if LLMs failing to meet all these performance indices are discarded this will severely limit the extent and sophistication of the analysis based on the remaining group, particularly if there is a requirement to control for other variables. As a result of such considerations it is important to consider ways of including as many LLMs as possible in the sample despite the apparent drawbacks and shortcomings associated with many of the equations. Conveniently there are several reasons to statistically justify this course of action.

One means of justifying extending the sample beyond the limited "well behaved" sub-set is by showing that there are no significant differences between the characteristics of the well behaved sub-group and the total sample. In many respects this pattern is borne out by the figures presented in Table A15.9. In this case the only differences between the two groups is in the average unemployment rate since for all other LLM characteristics the statistical differences between the good and bad LLMs are insignificant. Perhaps of even more relevance is the evidence presented in /........

---

(18) See Wonnacott and Wonnacott (1970) P23 for a discussion on the problems of estimating B on the basis of observations that are closely grouped together

(19) That is, and conversely in low R^2 areas, the number of UV observations are limited and tend to be bunched in one section of the UV quadrant rather than distributed along a curve as suggested by the ideal specification of the UV curves.

TABLE A15.9 LLM CHARACTERISTICS : DIFFERENCES BETWEEN GOOD AND BAD FIT EQUATIONS

VARIABLE	GOOD FIT	BAD FIT
Mean unemployment rate	3.48 (1.85)	2.96* (2.02)
Disp Vacancy Rate	0.45 (0.17)	0.48 (0.17)
Total Population 1971	95483 (98772)	87412 (131284)
Acreage	13980 (12979)	13904 (13609)
Compound Self Containment	161.3 (10.7)	161.6 (10.2)
Total number of observations	80 (22.1)	84 (19.8)
Standard Deviation of U	1.68 (0.78)	1.52 (0.86)

Note : (i) * signifies differences are significant at 90% confidence level (using F-Test)

(ii) **signifies differences are significant at 95% confidence level (using F-Test)

TABLE A15.10 LLM EFFICIENCY INDICES : DIFFERENCES BETWEEN GOOD AND BAD FIT EQUATIONS

VARIABLE	GOOD FIT	BAD FIT
B	- 0.25 (0.15)	-0.25 (0.19)
U*	3.14 (1.8)	3.07 (5.0)
U - U*	0.33 (1.4)	- 0.10 (4.7)

Note : (i) No statistically significant differences are evident.

Table A15.10 which shows that there are no significant differences between the accepted and rejected LLMs on the basis of the measures of LLM efficiency used in the study. Taking this into account, therefore, it is unlikely that by using the entire sample as a statistical base the results of any subsequent investigation will differ from those produced by analysing only the good fit LLMs.

Another justification for extending the sample size would be if the selection process identifying well-behaved equations was itself related to dominance or industrial structure. Under these circumstances the good fit sample would be biased and, therefore, may mask the true relationship between dominance and LLM efficiency. [(20)] The extent to which any such bias exists is illustrated in Table A15.11. Although some cell sizes in the matrix makes it difficult to accurately assess the significance of the differences it appears there are proportionately more non-dominant LLMs in the good fit but restricted sub sample. Accordingly there is some evidence to suggest that there is a bias in the selection process. Once again, therefore, there is an argument to extend the analysis beyond the well behaved sub group. [(21)] [(22)]

The nature of the selection criteria associated with both the independent variable and the constant terms in the equation also leaves scope to extent the sample to include UV equations where these are statistically insignificant. In this case the argument is that although the estimates may be insignificant they remain the best avalable estimates and as such should be included in any ralated analysis. [(23)] Moreover/...........

---

(20) In this respect one particular danger is that the LLM selection procedure may exclude many of the LLM types of particular interest to the research, thereby abstracting from the hypotheses under test.

(21) Note that as Table 12 Appendix 20 shows that there are no statistical differences between the proportion of high and low industry and plant dominated LLMs that are good or bad fit.

(22) As Table 13 Appendix 20 indicates there are also widespread differences on a regional basis between the proportion of LLMs classified as either good or bad fit.

(23) See any applied econometrics text for an explanation of this.

Moreover, if the UV regression suffers from either heteroscedasticity or autocorrelation then this will bias the standard error in a random fashion making it difficult to establish whether or not a coefficient is truely significant. (24) (25)

TABLE 15.11 THE RELATIONSHIP BETWEEN PLANT DOMINANCE AND UV EQUATION FIT

NATURE OF DOMINANCE	GOOD FIT LIMs		POOR FIT LIMs		TOTAL	
	No	%	No	%	No	%
Plant and Ind dominated	15	26.3	71	30.0	90	29.9
Plant but not Ind dominated	-	-	1	0.4	1	11.0
Ind not plant dominated	3	5.7	30	12.7	33	0.3
Not dominated	35	66.0	134	56.8	177	58.8
TOTAL	53	100	236	100	301	100

(24) The insignificance to the constant terms (Log A) the major cause of LIMs rejection actually (see above) indicates that $U=V^b$ There is nothing fundamentally wrong with this specification of the UV equation, and therefore it is perhaps too harsh to demand that the constant terms should be significant.

(25) Note also that if the UV equation is misspecified then the constant and the B coefficient will be biased and there will be a danger of accepting insignificant B and rejecting significant Bs and As.

It should also be remembered that the R^2 cut-off is arbritary and does not necessarily imply that either the constant or the B coefficient are not important determinants of the relationship between unemployment and vacancies, but rather that the total variation in unemployment and vacancies is not exclusively explained by A and B. Accordingly there is no fundamental reason why the 0.75 R^2 criteria should be rigidly adhered to if, as a result, it significantly reduces the number of LLMs under investigation.

Bearing in mind the arguments both for and against restricting the number of LLMs analysed it is difficult to unambiguously establish the most appropriate approach to the problem. Inevitably there has to be a trade-off between sample size, the performance of the UV equation and any bias created by excluding a proportion of the estimated equations. As a compromise, therefore, it is perhaps most appropriate to analyse the equations at different levels related to what extent they meet the predetermined econometric performance measures. More specifically it would seem appropriate to examine the UV equation results in parallel within the following hierarchy of sample sizes;

(1) The total sample excluding LLMs where there have been serious boundary changes or employment shifts, where an unacceptable level of autocorrelation persists, and where the are the highly unusual U* values. (26)

(ii) Level one excluding LLMs where B is insignificant

(iii) Level two excluding LLMs where A is insignificant

(iv) Good fit LLMs

---

(26) The last point involves 3 LLMs The anomalous U* values were caused by errors in the data collection.

Differences between the groups not explicable in terms of a bias in the selection procedure may then be attributed to the econometric and other difficulties associated with the analysis. For the practical purpose of recording the results of the research and deriving conclusions based on these it should be sufficient to record only the results relating to the total sample, excluding the LLMs with basic econometric shortcomings or data deficiencies. Only in instances where there are differences between the total sample and the smaller more tightly specified sub-samples need any other results be included. A complete set of tables covering all the sub samples associated with figures presented in the main text is presented for reference in Appendix 16 [27]

(27) This Appendix also presents tables which although either not directly referenced to in the text or not examined in any detail remain useful supplements to the more central discussion.

APPENDIX 16

UV REGRESSION RESULTS : SUMMARY TABLES FOR ALL SUB-SAMPLES AND CONTROL GROUPS

A16.1 PREFACE

This Appendix contains the tables relating to the results reported in the main body of the UV text but which for reasons of brevity and clarity it was thought best to include under a separate heading. As explained in the text (see Chapter 7, Section 1) the Appendix not only sets out the principal results of the UV exercise but it also presents all the tables related to these results. That is, the Appendix shows the figures produced by running all the sub-sample and control group data.

For illustrative purposes in each separate sub-section of the Appendix there is also a short summary statement indicating how each of the sub-groups investigated relates to the total sample. Where appropriate in these summaries the results of the control tables are also related to the uncontrolled statistics and tables presented in the main text. Differences within and between the tables have been noted and incorporated into the main body of the text where necessary. The differences within and between the tables presented in the summary statement have been recorded on a partly subjective scale running from an "exact match" through to "no match". A more detailed of the scale is shown in Table A16.1. Where further explantion of the differences between the tables under examination is required this is generally given in the comments section of the summary table.

TABLE A16.1 NATURE OF SCALE INDICATING THE DIFFERENCES BETWEEN THE UNCONTROLLED TABLES AND THE SUB-SAMPLE AND CONTROL GROUPS

Index	Meaning
Exact match	the rankings in the table(s) being compared coincide exactly
Very close match	the ranking in the table(s) being compared only differ in one marginal respect
Close match	the rankings in the table (s) being compared only differ in one or two respects
Poor match	the rankings in the table (s) being compared are only marginally alike
No match	there is no match or resemblence in the table rankings

Although all the key points to emerge from the UV data appendix are included in the main text in Chapter 7, it is worthwhile empahsising the two most important features to emerge from this exercise:

(i) The rankings across the different sub-sample groups, and particularly for the uncontrolled tables focussing either on the nature of dominance or the high/low dominance split, are generally very consistent. As a result, the decision to only refer to the complete sample in the main text may be defended with confidence.

(ii) In the controlled tables the consistency of the rankings is reduced. In some part this reflects the more limited number of observations in each category but probably mainly results from the reduction in variation between groupings brought about by the control process itself. Despite this particular problem, however, in most cases the uncontrolled rankings do reassert themselves at the control level. Therefore, once again it would seem that only a limited number of control statistics need to be included in the main text.

SECTION A16.2. THE RELATIONSHIP BETWEEN DOMINANCE AND LIM VARIABLES ACROSS THE SUB-SAMPLE GROUPS

Summary of Results

Variable	Consistency of Ranking Across Sub Samples	Comment
log A	exact	-
B	exact	-
R^2	close	variations only appear when sample size decreases significantly
U*	exact	-
U	very close	only change is in the smallest sample

2.1 The Relationship Between Dominance and Log A Across the Sub Sample Groups

Dominance Group	Total Sample		B Significant		B & A Significant		Well Behaved	
	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	0.91	2	0.71	2	1.17	2	1.12	2
Industry Dominated	0.47	3	0.49	3	0.79	3	0.74	3
Non Dominated	1.0	1	0.97	1	1.23	1	1.21	1
Total	0.93	-	0.84	-	1.19	-	1.17	-

2.2 The Relationship Between Dominance and B Across the Sub-Sample Groups

Dominance Group	Total Sample		B Significant		B & A Significant		Well Behaved	
	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	-0.22	1	-0.28	1	-0.24	1	-0.22	1
Industry Dominated	-0.32	3	-0.37	3	-0.33	3	-0.30	3
Non Dominated	-0.26	2	-0.29	2	-0.26	2	-0.28	2
Total	-0.25	-	-0.30	-	-0.26	-	-0.26	-

2.3 The Relationship Between Dominance and R2 Across the Sub-Sample Groups

Dominance Group	Total Sample		B Significant		B & A Significant		Well Behaved	
	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	83	1	84	1	79	1	86	2
Industry Dominated	82	2	82	2	68	3	89	1
Non Dominated	74	3	76	3	70	2	82	3
Total	78	-	0.79	-	72	-	83	-

2.4 The Relationship Between Dominance and U* Across the Sub-Sample Groups

Dominance Group	Total Sample		B Significant		B & A Significant		Well Behaved	
	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	2.7	2	2.0	2	2.9	2	2.9	2
Industry Dominated	1.6	3	1.6	3	2.1	3	2.5	3
Non Dominated	2.8	1	2.5	1	3.0	1	3.0	1
Total	2.6	-	2.3	-	3.0	-	3.0	-

2.5 The Relationship Between Dominance and U Across the Sub-Sample Groups

Dominance Group	Total Sample		B Significant		B & A Significant		Well Behaved	
	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	2.8	2	2.3	2	3.5	2	3.1	3
Industry Dominated	1.9	3	2.1	3	3.0	3	2.9	2
Non Dominated	3.4	1	3.1	1	4.0	1	3.5	1
Total	3.0	-	2.8	-	3.9	-	3.4	-

SECTION A16.3a THE RELATIONSHIP BETWEEN DOMINANCE AND LIM VARIABLES CONTROLLING FOR UNEMPLOYMENT

Summary of Results

Variable	Low Unemployment Consistency	High Unemployment Consistency	Overall Consistency	Relationship with Uncontrolled	Comment
log A	exact	exact	poor	largest sub-sample determines markings	plant dominated and non dominated rankings switched between groups - Reflects closeness before plant-dominated and non dominated LIMs
B	exact	very close	very close	very close	
R^2	exact	exact	exact	exact	
U*	exact	exact	poor	largest sub-sample determines rankings	plant & non dominated rankings switched between groups
U	very close	very close	very close	close	plant & non dominated rankings switched between groups

3a1 The Relationship Between Dominance and Log A Controlling for Unemployment

Unemployment Category	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Unemployment								
Plant Dominated	0.6	2	0.5	2	0.9	1	0.9	2
Industry Dominated	0.3	3	0.3	3	-0.1	3	-0.7	3
Non Dominated	0.7	1	0.7	1	0.9	1	1.0	1
Total	0.6	-	0.6	-	0.9	-	0.9	-
High Unemployment								
Plant Dominated	1.6	1	1.5	1	1.5	1	1.6	1
Industry Dominated	1.2	3	1.2	3	1.3	3	1.5	2
Non Dominated	1.5	2	1.4	2	1.4	2	1.5	2
Total	1.5	-	1.4	-	1.4	-	1.5	-
TOTAL	0.9	-	0.8	-	1.2	-	1.2	-

3a2 The Relationship Between Dominance and B Controlling for Unemployment

Unemployment Category	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Unemployment								
Plant Dominated	-0.27	1	-0.30	1	-0.27	1	-0.27	1
Industry Dominated	-0.34	3	-0.39	3	-0.51	3	-0.52	3
Non Dominated	-0.31	2	-0.33	2	-0.29	2	-0.33	2
Total	-0.30	-	-0.33	-	-0.29	-	-0.31	-
High Unemployment								
Plant Dominated	-0.17	1	-0.20	1	-0.20	1	-0.13	1
Industry Dominated	-0.24	3	-0.24	2	-0.24	2	-0.19	2
Non Dominated	-0.19	2	-0.24	2	-0.24	2	-0.23	3
Total	-0.17	-	-0.23	-	-0.23	-	-0.21	-
TOTAL	-0.25	-	-0.30	-	-0.26	-	-0.26	-

3a3 The Relationship Between Dominance and R2 Controlling for Unemployment Through Region

Unemployment Category	Total Sample		B Significant		B & . Significant		Well Behaved	
Low Unemployment								
Plant Dominated	87	1	87	1	86	1	86	2
Industry Dominated	85	2	85	2	73	3	87	1
Non Dominated	82	3	83	3	78	2	83	3
Total	84	-	84	-	80	-	84	-
High Unemployment								
Plant Dominated	75	1	71	1	72	1	86	2
Industry Dominated	66	2	66	2	66	2	90	1
Non Dominated	65	3	65	3	65	3	81	3
Total	67	-	66	-	66	-	82	-
TOTAL	78	-	79	-	72	-	83	-

3a4 The Relationship Between Dominance and U* Controlling for Unemployment

Unemployment Category	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Unemployment								
Plant Dominated	1.8	2	1.6	2	2.1	2	2.1	2
Industry Dominated	1.3	3	1.3	3	1.0	3	0.6	3
Non Dominated	1.9	1	1.9	1	2.4	1	2.3	1
Total	1.7	-	-1.7	-	2.2	-	2.2	-
High Unemployment								
Plant Dominated	4.6	2	4.0	1	4.0	1	4.7	1
Industry Dominated	2.8	3	2.8	3	2.8	3	3.4	3
Non Dominated	4.0	2	3.5	2	3.5	2	3.8	2
Total	4.1	-	3.5	-	3.5	-	3.9	-
TOTAL	2.6	-	2.3	-	3.0	-	3.0	-

3a5 The Relationship Between Dominance and U Controlling for Unemployment

Unemployment Category	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Unemployment								
Plant Dominated	1.7	2	1.7	3	2.1	2	2.1	2
Industry Dominated	1.6	3	1.7	3	1.6	3	0.7	3
Non Dominated	1.9	1	1.9	1	2.4	1	2.4	1
Total	1.8	-	1.8	-	2.2	-	2.2	-
High Unemployment								
Plant Dominated	5.2	1	5.3	1	5.2	1	5.3	1
Industry Dominated	3.8	3	3.8	3	3.8	3	4.0	3
Non Dominated	5.2	1	5.1	2	5.1	2	4.8	2
Total	5.1	-	5.0	-	5.0	-	4.8	-
TOTAL	3.0	-	2.8	-	3.9	-	3.4	-

SECTION A16.3b The Relationship Between Dominance and LIM Variables Controlling for Unemployment Through Region

Summary of Results

Variable	High Unemployment Consistency	Medium Unemployment Consistency	Low Unemployment Consistency	Overall Consistency	Relationship with Uncontrolled	Comment
log A	poor	close	close	poor	poor	no apparent consistency
B	poor	very close	poor	poor	poor	no apparent consistency
R^2	exact	very close	exact	close	close	-
U*	exact	very close	exact	close	close	-
U	exact	close	exact	very close	very close	

3b1 The Relationship Between Dominance and Log A Controlling for Unemployment Through Region

Unemployment Category	Total Sample		B Significant		B & A Significant		Well Behaved	
<u>High Unemployment Region</u>								
Plant Dominated	1.5	1	1.3	2	1.5	2	1.5	2
Industry Dominated	1.5	1	0.9	3	1.0	3	1.5	2
Non Dominated	0.8	3	1.6	1	1.6	1	1.6	1
Total	1.5	-	1.4	-	1.5	-	1.5	-
<u>Medium Unemployment Region</u>								
Plant Dominated	0.6	2	0.5	3	1.1	2	0.6	3
Industry Dominated	0.6	2	0.7	2	0.9	3	1.4	2
Non Dominated	0.9	1	0.9	1	1.2	1	1.1	1
Total	0.8	-	0.8	-	1.1	1	1.0	-
<u>Low Unemployment Region</u>								
Plant Dominated	0.7	1	0.6	2	1.0	2	1.0	2
Industry Dominated	0.1	3	0.0	3	-0.7	3	-0.7	3
Non Dominated	0.7	1	0.7	1	1.1	1	1.1	1
Total	0.6	-	0.6	-	1.0	-	1.0	-
TOTAL	0.9	-	0.8	-	1.2	-	1.2	-

3b2 The Relationship Between Dominance and B Controlling for Unemployment Thru Region

Unemployment Band by Region	Total Sample		B Significant		B & . Significant		Well Behaved	
Low Unemployment								
Plant Dominated	-0.12	2	-0.18	1	-0.15	1	-0.16	1
Industry Dominated	-0.10	1	-0.38	3	-0.34	3	-0.19	3
Non Dominated	-0.29	3	-0.17	2	-0.17	2	-0.18	2
Total	-0.11	-	-0.19	-	-0.18	-	-0.17	-
Medium Unemployment Region								
Plant Dominated	-0.25	1	-0.27	1	-0.27	2	-0.21	3
Industry Dominated	-0.26	2	-0.29	2	-0.26	1	-0.20	2
Non Dominated	-0.28	3	-0.29	2	-0.28	3	-0.19	1
Total	-0.27	-	-0.29	-	-0.28	-	-0.26	-
Low Unemployment Region								
Plant Dominated	-0.32	1	-0.36	2	-0.34	2	-0.34	1
Industry Dominated	-0.43	3	-0.47	3	-0.52	3	-0.52	3
Non Dominated	-0.34	2	-0.34	1	-0.31	1	-0.36	2
Total	-0.34	-	-0.36	-	-0.32	-	-0.37	-
TOTAL	-0.25	-	-0.36	-	-0.26	-	-0.26	-

3b3 The Relationship Between Dominance and R2 Controlling for Unemployment Through Region

Unemployment Band by Region	Total Sample		B Significant		B & A Significant		Well Behaved	
High Unemployment								
Plant Dominated	81	1	84	1	83	1	87	1
Industry Dominated	74	2	74	2	72	2	85	2
Non Dominated	69	3	70	3	70	3	82	3
Total	74	-	74	-	73	-	84	-
Medium Unemployment Region								
Plant Dominated	80	2	80	2	69	2	81	3
Industry Dominated	81	1	82	1	60	3	95	1
Non Dominated	78	3	80	2	73	1	83	2
Total	79	-	80	-	71	-	83	-
Low Unemployment Region								
Plant Dominated	90	1	89	1	88	1	88	1
Industry Dominated	86	2	85	2	87	2	87	2
Non Dominated	75	3	75	3	67	3	81	3
Total	81	-	80	-	71	-	83	-
TOTAL	78	-	79	-	72	-	83	-

3b4 The Relationship Between Dominance and U* Controlling for Unemployment Through Region

Unemployment Band by Region	Total Sample		B Significant		B & A Significant		Well Behaved	
High Unemployment Region								
Plant Dominated	4.4	2	3.6	2	4.1	2	4.1	2
Industry Dominated	2.1	3	2.2	3	2.5	3	3.6	3
Non Dominated	4.8	1	4.1	1	4.2	1	4.2	1
Total	4.5	-	3.8	-	4.0	-	4.1	-
Medium Unemployment Region								
Plant Dominated	1.7	2	1.7	3	2.2	3	1.9	2
Industry Dominated	1.7	2	1.9	2	2.5	2	3.2	1
Non Dominated	2.3	1	2.3	1	2.7	1	2.8	3
Total	2.1	-	2.1	-	2.6	-	2.6	-
Non Unemployment Region								
Plant Dominated	1.8	2	1.5	2	2.2	2	2.2	2
Industry Dominated	1.1	3	1.0	3	0.6	3	0.6	3
Non Dominated	1.9	1	2.0	1	2.5	1	2.3	1
Total	1.8	-	1.8	-	2.4	-	2.2	-
TOTAL	2.6	-	2.3	-	3.0	-	3.0	-

3b5 The Relationship Between Dominance and U Controlling for Unemployment Through Region

Unemployment Band by Region	Total Sample		B Significant		B & A Significant		Well Behaved	
High Unemployment Region								
Plant Dominated	4.6	2	4.0	2	4.5	2	4.4	3
Industry Dominated	2.8	3	3.1	3	3.7	3	5.0	2
Non Dominated	5.6	1	5.6	1	5.6	1	5.2	1
Total	5.0	-	4.9	-	5.2	-	4.9	-
Medium Unemployment Region								
Plant Dominated	2.2	2	2.2	3	3.4	2	2.1	3
Industry Dominated	2.1	3	2.3	2	3.3	3	3.0	1
Non Dominated	2.8	1	2.8	1	3.5	1	3.0	1
Total	2.5	-	2.6	-	3.5	-	2.8	-
Low Unemployment Region								
Plant Dominated	1.6	2	1.5	2	2.1	2	2.0	2
Industry Dominated	1.3	3	1.3	3	0.7	3	0.7	3
Non Dominated	2.4	1	2.4	1	3.3	1	2.9	1
Total	2.0	-	2.1	-	3.0	-	2.6	-
TOTAL	3.0	-	2.8	-	3.9	-	3.4	-

SECTION A16.4 THE RELATIONSHIP BETWEEN HIGH DOMINANCE AND LOW DOMINANCE AREAS AND LIM VARIABLES ACROSS THE SUB SAMPLE GROUPS

Summary of Results

Variable	Consistency of ranking across sub-samples	Comment
log A	exact	-
B	exact	-
R^2	very close	-
U*	very close	-
U	poor march	switch in rankings in lower sample sizes

1

4.1 The Relationship Between High Dominance and Low Dominance Areas and Log A Across the Sub Sample Groups

Level of Dominance	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Dominance	0.79	1	0.70	1	1.1	1	1.07	1
High Dominance	0.74	2	0.43	2	1.0	2	1.01	2
Total	0.78	-	0.62	-	1.1	-	1.05	-

4.2 The Relationship Between High Dominance and Low Dominance Areas and B Across the Sub Sample Groups

Level of Dominance	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Dominance	-0.28	2	-0.34	2	-0.29	2	-0.28	2
High Dominance	-0.20	1	-0.27	1	-0.18	1	-0.18	1
Total	-0.25	-	-0.31	-	-0.27	-	-0.25	-

4.3 The Relationship Between High Dominance and Low Dominance Areas and Log R2 Across the Sub Sample Groups

Level of Dominance	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Dominance	80	2	81	2	73	2	86	1
High Dominance	88	1	88	1	86	1	86	1
Total	83	-	83	-	76	-	86	-

4.4 The Relationship Between High Dominance and Low Dominance Areas and U* Across the Sub Sample Groups

Level of Dominance	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Dominance	2.2	2	1.9	1	2.6	2	2.5	2
High Dominance	2.6	1	1.9	1	3.7	1	3.7	1
Total	2.4	-	1.9	-	2.8	-	2.9	-

4.5 The Relationship Between High Dominance and Low Dominance Areas and U Across the Sub Sample Groups

Level of Dominance	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Dominance	2.6	1	2.3	1	3.4	2	2.8	2
High Dominance	2.5	2	1.9	2	3.6	1	3.5	1
Total	2.6	-	2.2	-	3.4	-	3.1	-

SECTION A16.5 THE RELATIONSHIP BETWEEN PLANT DOMINATED HIGH DOMINANCE & LOW DOMINANCE AREAS AND LIM VARIABLE ACROSS THE SUB SAMPLE GROUPS

Summary of Results

Variable	Consistency of Rankings across sub sample	Relationship to uncontrolled variable	Comment
log A	poor	poor	relationship changes with smaller sub-sample which given the low number of observations is not surprising
B	exact	exact	-
R^2	exact	exact	-
U*	very close	exact	-
U	poor	exact	relationship changes with smaller sub-samples

5.1 The Relationship Between Plant Dominated Size Dominance & Low Dominance Areas and Log A Across the Sub Sample Groups

Level of Dominance	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Dominance	0.95	1	0.82	1	1.13	2	1.04	2
High Dominance	0.86	2	0.50	2	1.44	1	1.44	1
Total	0.91	-	0.74	-	1.20	-	1.15	-

5.2 The Relationship Between Plant Dominated Size Dominance & Low Dominance Areas and B Across the Sub Sample Groups

Level of Dominance	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Dominance	-0.25	2	-0.31	2	-0.29	2	-0.28	2
High Dominance	-0.18	1	-0.25	1	-0.10	1	-0.10	1
Total	-0.22	-	-0.29	-	-0.25	-	-0.23	-

5.3 The Relationship Between Plant Dominated Size Dominance & Low Dominance Areas and R2 Across the Sub Sample Groups

Level of Dominance	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Dominance	80	2	81	2	76	2	85	2
High Dominance	89	1	89	1	86	1	86	1
Total	83	-	84	-	78	-	85	-

5.4 The Relationship Between Plant Dominated Size Dominance & Low Dominance Areas and U* Across the Sub Sample Groups

Level of Dominance	Total Sample		B Significant		B & A Significant		Well Behaved	
Low Dominance	2.6	2	2.0	1	2.67	2	2.5	2
High Dominance	2.9	1	2.0	1	4.51	1	4.5	1
Total	2.7	-	2.0	-	3.08	-	3.07	-

5.5 The Relationship Between Plant Dominated Size Dominance & Low Dominance Areas and U Across the Sub Sample Groups

	Total Sample		B Significant		B & A Significant		Well Behaved	
Level of Dominance								
Low Dominance	3.0	1	2.5	1	3.5	2	2.8	2
High Dominance	2.6	2	2.0	2	4.3	1	4.3	1
Total	2.8	-	2.3	-	3.7	-	3.2	-

SECTION A16.6 THE RELATIONSHIP BETWEEN INDUSTRY DOMINATED HIGH DOMINANCE AND LOW DOMINANCE AREAS AND LIM VARIABLES ACROSS TWO SUB-SAMPLES

Summary of Results

Variable	Consistency of Rankings across sub sample	Relationship to uncontrolled variable	Comment
log A	exact	exact	-
B	exact	exact	-
R^2	exact	exact	-
U*	exact	poor	-
U	exact	exact	

Note (i) Limited comparison due to limited no of observations.

6.1 The Relationship Between Industry Dominated High Dominance and Low Dominance Areas and Log A Across Two Sub-Sample Groups

Level of Dominance	Total Sample		B Significant	
Low Dominance	0.50	1	0.52	1
High Dominance	-0.00	2	-0.00	2
Total	0.42	-	0.45	-

6.2 The Relationship Between Industry Dominated High Dominance and Low Dominance Areas and B Across Two Sub-Sample Groups

Level of Dominance	Total Sample		B Significant	
Low Dominance	-0.34	2	-0.38	2
High Dominance	-0.28	1	-0.34	1
Total	-0.33	-	-0.38	-

6.3 The Relationship Between Industry Dominated High Dominance and Low Dominance Areas and R2 Across Two Sub-Sample Groups

	Total Sample		B Significant		B & A Significant	Well Behaved
Level of Dominance						
Low Dominance	82	2	81	2		
High Dominance	83	1	85	1		
Total	82	-	82	0		

6.4 The Relationship Between Industry Dominated High Dominance and Low Dominance Areas and U* Across Two Sub-Sample Groups

	Total Sample		B Significant		B & A Significant	Well Behaved
Level of Dominance						
Low Dominance	1.6	1	1.6	1		
High Dominance	1.2	2	1.2	2		
Total	1.5	-	1.5	-		

6.5 The Relationship Between Industry Dominated High Dominance and Low Dominance Areas and U Across Two Sub-Sample Groups

Level of Dominance	Total Sample		B Significant	
Low Dominance	1.9	1	2.0	1
High Dominance	1.4	2	1.5	2
Total	1.8	-	1.9	-

SECTION A16.7 THE RELATIONSHIP BETWEEN HIGH DOMINANCE AND LOW DOMINANCE AREAS AND LIM VARIABLES CONTROLLING FOR UNEMPLOYMENT THROUGH REGION

Summary of Results

Variable	Internal Consistency	Relationship to uncontrolled table	Comment
log A	close	as expected	-
B	close	as expected	-
R^2	exact	exact	-
U*	close	as expected	-
U	close	as expected	-

7. The Relationship Between High Dominance and Low Dominance areas and LLM Variables Controlling for Unemployment Through Region: Total Sample

Unemployment Band By Region	log A		B		R^2		U*		U		No of Observations
High Unemployment Region											
Low Dominated	1.23	2	-0.12	1	76	2	3.6	2	4.1	2	16
High Dominated	1.65	1	-0.16	2	86	1	5.1	1	4.8	1	9
Total	1.41	-	-0.06	-	80	-	4.2	-	4.3	-	25
Medium Unemployment Region											
Low Dominated	0.64	1	-0.29	2	77	2	1.8	1	2.4	1	25
High Dominated	0.41	2	-0.18	1	87	1	1.6	2	1.7	2	10
Total	0.58	-	-0.26	-	80	-	1.7	-	2.2	-	35
Low Unemployment Region											
Low Dominated	0.60	1	-0.37	2	88	2	1.6	1	1.6	1	19
High Dominated	0.30	2	-0.32	1	89	1	1.6	1	1.3	2	11
Total	0.49	-	-0.35	-	89	-	1.6	-	1.5	-	30
TOTAL	0.78	-	-0.25	-	83	-	2.4	-	2.6	-	90

SECTION A16.8 THE RELATIONSHIP BETWEEN HIGH DOMINANCE AND LOW DOMINANCE AREAS AND LLM VARIABLES CONTROLLING FOR UNEMPLOYMENT

Summary of Results

Variable	Internal Consistency	Relationship to uncontrolled table	Comment
log A	ranking reversed	limited	see general note 1.
B	ranking reversed	limited	see general note 1.
R^2	exact match	exact match	
U*	exact match	exact match	
U	close match	very close match	

Note 1: The rankings in the uncontrolled tables are the same as the low unemployment group since this is where most of the observations are concentrated. Therefore, since most of the cases are concentrated in this grouping more weight should be given to this category although the possibilities of a different relationship at the high unemployment level cannot be ruled out. That is the uncontrolled table does in part actually control for unemployment since most observations fall into the low unemployment category.

8.1 Plant and Industry Dominated, High and Low Dominated LLMs Controlling for Unemployment : All LLMs

Unemployment Band By Region	log A		B		R^2		U*		U		No of Observations
High Unemployment Region											
Low Dominance	0.55	1	-0.32	2	85	2	1.60	2	1.7	1	44
High Dominance	0.40	2	-0.25	1	88	1	1.67	1	1.5	2	22
Total	0.50	-	-0.30	-	86	-	1.63	-	1.7	-	66
High Unemployment											
Low Dominance	1.47	2	-0.13	1	67	2	3.90	2	5.0	1	16
High Dominance	1.68	1	-0.17	2	86	1	5.35	1	5.0	1	8
Total	1.54	-	-0.06	-	73	-	4.39	-	5.0	-	24
TOTAL	0.78	-	-0.25	-	83	-	2.36	-	2.6	-	90

SECTION A16.9. LLM Variables For Plant and Industry Dominated Areas, Broken Down by Industry

Industry	log A	B	R^2	U*	U
Coal Mining	1.32	-0.05	88	4.07	2.58
Food & Drink	0.60	-0.23	62	1.81	3.57
Chemicals	1.37	-0.12	86	3.50	2.32
Iron & Steel	1.00	-0.20	85	2.83	3.61
Mechanical Engineering	1.12	-0.30	83	2.44	3.15
Electronics & Electrical Machining	1.05	-0.26	84	3.12	3.01
Shipbuilding	0.64	-0.33	87	2.16	3.40
Automobiles	0.59	-0.25	81	1.70	2.41
Metal Goods, Cans, Metal Boxes	0.34	-0.39	93	1.28	1.95
Textiles	0.43	-0.28	83	1.49	1.19
Footwear	0.17	-0.31	85	1.25	1.85
Glass, Pottery & Bricks	0.67	-0.45	78	1.60	1.39
Timber	1.04	-0.47	78	2.02	1.83
Paper & Board	0.44	-0.36	87	1.45	2.11
Rubber	-0.13	-0.24	85	0.90	1.75
Double Dominated	0.77	-0.28	80	2.41	0.86
Total	0.79	-0.25	83	2.37	2.64

SECTION 16.10 LIM VARIABLES FOR PLANT DOMINATED AREAS, BROKEN DOWN BY INDUSTRY

Industry	log A	B	R^2	U*	U
Coal Mining	1.32	-0.05	88	4.1	3.6
Food & Drink	0.55	-0.21	70	1.8	2.1
Chemicals	1.35	-0.09	81	3.6	3.9
Iron & Steel	0.94	-0.20	85	2.7	2.9
Mechanical Engineering	1.39	-0.28	85	2.8	3.5
Electronics & Electrical Machining	1.05	-0.26	83	3.1	3.4
Shipbuilding	0.69	-0.29	86	2.3	2.5
Automobiles	0.50	-0.25	87	1.6	1.6
Metal Goods, Cans, Metal Boxes	-	-	-	-	-
Textiles	0.54	-0.27	82	1.6	2.0
Footwear	0.18	-0.36	77	1.1	1.3
Glass, Pottery & Bricks	-	-	-	-	-
Timber	1.04	-0.47	78	2.0	2.1
Paper & Board	0.67	-0.22	89	1.7	2.0
Rubber	-0.13	-0.24	85	0.9	0.9
Double Dominated	0.77	-0.28	80	2.4	2.6
Total	0.91	-0.22	83	2.7	2.8

SECTION A16.11 THE RELATIONSHIP BETWEEN DOMINANCE AND LIM VARIABLES EXCLUDING COAL AND STEEL DOMINATED LIMS ACROSS THE SUB-SAMPLE GROUPS

Summary of Results

Variable	Consistency of ranking across sub samples	Relationship to uncontrolled variable	Comment
log A	exact	exact	-
B	very close	close	there is an increase in the efficiency of plant dominated LIMs which changes the comparitive ranking in certain sub groups.
R^2	very close	very close	-
U*	exact	exact	-
U	exact	very close	-

11.1 Relationship Between Dominance and Log A Excluding Coal and Steel Dominated LLMs Across the Sub-Sample Groups

	Total Sample		B Significant		B & A Significant		Well Behaved	
Level of Dominated	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	0.82	2	0.69	2	2.11	2	1.07	2
Industry Dominated	0.42	3	0.45	3	0.65	3	0.35	3
Non Domianted	1.04	1	0.97	1	1.23	1	1.21	1
Total	0.91	-	0.84	-	1.17	-	1.15	-

11.2 Relationship Between Dominance and B Excluding Coal and Steel Dominated LLMs Across the Sub-Sample Groups

	Total Sample		B Significant		B & A Significant		Well Behaved	
Level of Dominance	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	-0.26	1	-0.30	2	-0.27	2	-0.24	1
Industry Dominated	-0.33	3	-0.38	3	-0.36	3	-0.35	3
Non Dominated	-0.26	1	-0.29	1	-0.26	1	-0.28	2
Total	-0.27	1	-0.31	-	-0.27	-	-0.27	-

11.3 Relationship Between Dominance and R2 Excluding Coal and Steel Dominated LLMs Across the Sub-Sample Groups

Level of Dominance	Total Sample No	Total Sample Rank	B Significant No	B Significant Rank	B & A Significant No	B & A Significant Rank	Well Behaved No	Well Behaved Rank
Plant Dominated	82	1	83	1	80	1	85	2
Industry Dominated	82	1	82	2	65	3	91	1
Non Dominated	74	3	76	3	70	2	82	3
Total	77	-	78	-	72	-	83	-

11.4 Relationship Between Dominance and U* Excluding Coal and Steel Dominated LLMs Across the Sub-Sample Groups

Level of Dominance	Total Sample No	Total Sample Rank	B Significant No	B Significant Rank	B & A Significant No	B & A Significant Rank	Well Behaved No	Well Behaved Rank
Plant Dominated	2.3	2	1.9	2	2.8	2	2.8	2
Industry Dominated	1.5	3	1.5	3	1.9	3	1.9	3
Non Dominated	2.8	1	2.5	1	3.1	1	1.0	1
Total	2.6	-	2.2	-	2.9	-	2.9	-

11.5 Relationship Between Dominance and U Excluding Coal and Steel Dominated LIMs Across the Sub-Sample Groups

	Total Sample		B Significant		B & A Significant		Well Behaved	
Level of Dominance	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	2.6	2	2.3	2	3.4	2	3.0	2
Industry Dominated	1.8	3	1.9	3	2.6	3	1.9	3
Non Dominated	3.4	1	3.14	1	4.0	1	3.5	1
Total	3.0	-	2.8	-	3.8	-	3.4	-

SECTION A16.12 THE RELATIONSHIP BETWEEN DOMINANT PLANT OWNERSHIP CHARACTERISTICS AND LIM VARIABLES, EXCLUDING STEEL AND COAL DOMINATED LIMS

Summary of Results

Variable	Relationship with Uncontrolled Table	Comment
log A	position of state owned company's changed	ranking change marginal 1 to 2
B_1	position of state owned company's changed	ranking change marginal 1 to 2
R^2	postion of state owned company's changed	ranking change marginal 2 to 3
U*	postion of state owned company's changed	difference more significant, 1 to 3
U	position of state owned company's changed	difference more significant, ie. 2 to 4

12.1 The Relationship Between Dominant Plant Ownership Characteristics and LIM Variables. Excluding Steel and Coal Dominated LIMs

Ownership Group	log A		B_1		R^2		U*		U		Number of Observations
State	0.90	2	-0.20	2	85	3	2.3	3	2.1	4	4
Quasi State	0.69	4	-0.39	5	88	2	2.5	2	2.5	3	4
Foreign	1.07	1	-0.19	1	85	3	3.0	1	4.5	1	6
UK Non Local	0.80	3	-0.29	4	79	5	2.2	4	2.7	2	29
Local	0.65	5	-0.20	2	90	1	2.1	5	1.9	1	5
Total		-		-		-		-		-	

SECTION A16.13 THE RELATIONSHIP BETWEEN HIGH AND LOW DOMINANCE AREAS AND LLM VARIABLES EXCLUDING COAL AND STEEL DOMINATED LLMs.

Summary of Results

Variable	Relationship with Uncontrolled Table	Comment
log A	exact match	
B	exact match	
R^2	exact match	
U*	exact match	
U	exact match	

13.1 The Relationship Between High & Low Dominance Areas and LLM Variables, Excluding Coal & Steel Dominated Areas

Dominance Group	log A		B_1		R^2		U*		U		No of Observations
Low Dominance	0.73	1	-0.30	2	79	2	2.00	2	2.47	1	56
High Dominance	0.55	2	-0.24	1	87	1	2.27	1	2.15	2	18
Total	0.69	-	-0.29	-	81	-	2.01	-	2.39	-	74

SECTION A.16.14 THE RELATIONSHIP BETWEEN DOMINANCE AND SELECTED ADDITIONAL LIM VARIABLES

Summary Table

Variable	Relationship with Uncontrolled Table	Comment
Compound Self-Containment	close match	The difference between the categories are very small and can effectively be ignored
Average Unemployment rate	exact match	The differences are significant between categories and this finding is addressed in the text
Total Population (1971)	close match	Differences between categories are again discussed in the text
Average	close match	Differences noted in text
Total No of Observations	poor match	Although the pattern of rankings differ between sub samples this is not a key variable

14.1 LIM Variables by Dominance Compound Self-Containment

	Total Sample		B Significant		B & A Significant		Well Behaved	
Dominance Group	NO	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	160	3	160	3	161	3	160	2
Industry Dominated	162	2	162	1	163	2	156	3
Non Dominated	163	1	162	1	165	1	162	1
Total	162	-	162	-	164	-	161	-

LIM Variables by Dominance:

14.2 Mean Unemployment Rate

	Total Sample		B Significant		B & A Significant		Well Behaved	
Dominance Group	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	2.8	2	2.3	2	3.5	2	3.1	2
Industry Dominated	1.9	3	2.0	3	3.0	3	2.9	3
Non Dominated	3.4	1	3.1	1	4.0	1	3.5	1
Total	3.0	-	2.8	-	3.9	-	3.4	-

14.3 LIM Variables by Dominance: Total Population 1971 (000s)

	Total Sample		B Significant		B & A Significant		Well Behaved	
Dominance Group	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	54	3	57	3	52	2	59	2
Industry Dominated	65	2	72	2	44	3	50	3
Non Dominated	101	1	100	1	88	1	112	1
Total	83	-	85	-	77	-	95	-

14.4 LIM Variables By Dominance: Acreage (000)

	Total Sample		B Significant		B & A Significant		Well Behaved	
Dominance Group	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	15	1	14	1	11	1	11	2
Industry Dominated	11	3	12	3	7	3	11	2
Non Dominated	14	2	13	2	11	1	14	1
Total	14	-	13	-	10	-	13	-

14.5 LIM Variables by Dominance Total No of Observations

	Total Sample		B Significant		B & A Significant		Well Behaved	
Dominance Group	No	Rank	No	Rank	No	Rank	No	Rank
Plant Dominated	81	3	87	1	80	2	78	3
Industry Dominated	87	1	87	1	75	3	80	2
Non Dominated	83	2	86	3	82	1	82	1
Total	83	-	86	-	81	-	81	-

15.1 The Number of Observations in Tabulations. The No of Observations by Sub Sample Group Controlling for Unemployment

Unemployment Category	Total Sample	B Significant	B & A Significant	Well Behaved
Low Unemployment				
Plant Dominated	46	40	11	11
Industry Dominated	22	18	2	1
Non Dominated	70	66	27	22
Total	138	124	40	34
High Unemployment				
Plant Dominated	21	9	9	5
Industry Dominated	4	4	4	2
Non Dominated	57	42	41	21
Total	82	55	54	28
TOTAL	220	179	94	62

15.2 The Number of Observations by Sub Sample Group Controlling for Unemployment Through Region

Unemployment Category	Total Sample	B Significant	B & A Significant	Well Behaved
Low Unemployment Region				
Plant Dominated	23	10	8	7
Industry Dominated	4	3	2	1
Non Dominated	33	19	19	11
Total	60	32	29	19
Medium Unemployment Region				
Plant Dominated	23	21	7	4
Industry Dominated	13	11	3	1
Non Dominated	48	44	26	19
Total	84	76	36	24
Low Unemployment Region				
Plant Dominated	21	18	5	5
Industry Dominated	9	8	1	1
Non Dominated	46	45	23	13
Total	76	71	29	19
TOTAL	220	179	94	62

15.3 LIM Variables by Dominance : the No of Observations in Each Category Across the Sub Sample Structure

	Total Sample	B Significant	B & A Significant	Well Behaved
Dominance Group				
Plant Dominated	67	49	20	16
Industry Dominated	26	22	6	3
Non Dominated	127	108	68	43
Total	220	179	94	62

15.4 LIM Variables by Dominance Excluding Coal and Steel : the No of Observations in Each Category Across the Sub-Sample Structure

Well Behaved	Total Sample	B Significant	B & A Significant	
Dominance Group				
Plant Dominated	48	40	17	14
Industry Dominated	25	21	5	2
Non Dominated	127	108	68	43
Total	200	169	90	59

15.5 Plant and Industry High and Low Dominated LIMs : the No of Observations

Level of Dominance	Total Sample(1)	B Significant(1)	B & A Significant	Well Behaved
Low Dominance	60	48	18	11
High Dominance	30	20	5	5
Total	90	68	23	16

Note (i) 3 cases missing, ie not allocated.

15.6 Plant Dominated High/Low Dominance Distinction : The No of Observations

Level of Dominance	Total Sample	B Significant	B & A Significant	Well Behaved
Low Dominance	39	30	14	10
High Dominance	26	17	4	4
Total	65	47	18	14

15.7 Industry Dominated High Low Dominance Distinction : No of Observations

	Total Sample	B Significant	B & A Significant	Well Behaved
Level of Dominance				
Low Dominance	21	18	4	2
High Dominance	4	3	1	1
Total	25	21	5	1

15.8 Plant and Industry Dominated : No of Observations in each Industry

Industry	No of Observations
Coal Mining	11
Food & Drink	6
Chemicals	3
Iron & Steel	9
Mechanical Engineering	8
Electronics &	
Electrical Machining	9
Shipbuilding	10
Automobiles	5
Metal Goods,...., Cans	
Metal Boxes	1
Textiles	12
Footwear	7
Glass, Pottery &	
Bricks	1
Timber	1
Paper & Board	3
Rubber	1
Double Dominated	6
Total	93

15.9 Plant Dominated : No of Observations in each Industry

Industry	No of Observations
Coal Mining	11
Food & Drink	5
Chemicals	2
Iron & Steel	8
Mechanical Engineering	6
Electronics & Electrical Machining	9
Shipbuilding	9
Automobiles	3
Metal Goods,...., Cans Metal Boxes	-
Textiles	3
Footwear	2
Glass, Pottery & Bricks	-
Timber	1
Paper & Board	1
Rubber	1
Double Dominated	6
Total	67

15.10 Plant Dominated LLMs: no of Observations for Ownership Group

Ownership Group	No of Observations
State	22
Quasi State	4
Foreign	6
UK Non Local	30
Local	5
Total	67

Appendix 17

Miscellaneous Tables

TABLE A17.1 INDUSTRY BASED EARNINGS COMPARISION: DIFFERENCE BETWEEN HIGH AND LOW DOMINANT GROUPS.

	High Dominance Group			Low Dominance Group		
Earnings Level	Skilled Male Manuals*	Other Male Manuals	Female Manuals	Skilled Male Manuals	Other Male Manuals	Female Manuals
Amongst the highest	12.5	6.2	6.2	5.6	11.1	12.5
Above average	12.5	12.5	18.7	33.3	27.8	31.2
Average	62.5	62.5	68.7	22.2	27.8	31.2
Below Average	12.5	18.7	6.2	22.2	16.7	6.2
Amongst the lowest	0	0	0	0	0	0.0
Dont Know	0	0	0	16.7	16.7	18.7
Total	100	100	100	100	100	100

Note (i)* equals significant difference at 90% level of confidence.
(ii) the figures in each cell relate to the percentage of each sample falling into individual categories.

TABLE A17.2 THE PROVISION OF FRINGE BENEFITS : DOMINANT PLANT & CONTROL GROUP COMPARISONS

	Proportion of Plants Providing Fringe Benefits	
Extent of Fringe Benefits	Dominant Plant Sample	Control Group
More extensive than other firms	70	29
About the same as other firms	24	71
Less than other firms	5	0
Dont know	0	0
Total no. of observations	37(100)	24(100)

Note (i) differences between the two groups are significant at the 90% confidence level.

TABLE A17.3 THE EXTENT OF DOMINANT PLANT AND CONTROL GROUP WAGE SURVEYS

Nature of Wage Survey	Proportion of Plants Undertaking Wage Surveys	
	Dominant Plant Sample	Control Group
Other firms in the same industry operating in the same area	51	78
Other firms in the area not in the industry	47	57
Other firms in the industry not in the area	18	60
Other firms not in the area and not in the same industry	8	23
Total number of observations	37(100)	24(100)

TABLE A.17.4 THE AVERAGE NUMBER OF RECRUITMENT METHODS USED BY DOMINANT AND CONTROL GROUP PLANTS

	Dominant Plants			Control Group		
	Skilled male Manuals	Other male Manuals	Female Manuals	Skilled male Manuals	Other male Manuals	Female Manuals
Mean no of recruitment methods used in last 6 months	5.7	4.6	3.4	5.8	4.6	3.9
Mean no of recruitment methods used when difficult to recruit	6.1	5.1	3.9	6.6	4.9	4.3
Mean no of recruitment methods used when easy to recruit	3.7	3.7	3.0	4.0	4.0	3.4

TABLE 17.5 THE OVERALL USE OF RECRUITMENT METHODS CONSISTANT WITH OVERCOMING MONOPSONISTIC PRESSURES: THE TIGHT LLM CASE

	Dominant Plant			Control Group Plants		
	Skilled Male Manual	Female Manuals	Other Male Manuals	Skilled Male Manuals	Female Manuals	Other Male Manuals
Use of recruitment methods potentially associated with monopsonistic pressures	77 (52)	54 (36)	40 (27)	42 (46)	28 (29)	26 (27)

Note. (i) the top figures represent the total number of times the potentially monopsonistic methods are used to hire labour.

(ii) the percentages (the figures in brackets) are calculated as a proportion of the maximum possible use of each method.

TABLE 17.6 THE USE OF EXTERNAL TRAINING COURSES

	Dominant Plants			Control Group Plants		
	Skilled Male Manuals	Other Male Manuals	Female Manuals	Skilled Male Manuals	Other Male Manuals	Female Manuals
The proportion of plants using external courses	89	44	17	87	45	30
Total number of observations	37	34	29	23	20	20
	High Dominance			Low Dominance		
	Skilled Male Manuals	Other Male Manuals	Female Manuals	Skilled Male Manuals	Other Male Manuals	Female Manuals
The proportion of plants using external courses	90	40	12	87	50	23
Total number of observations	21	20	16	16	14	13

TABLE A17.7 HIGH AND LOW DOMINANCE UNIONISATION LEVELS

Level of Dominance	Level of Unionisation		
	Skilled Male Manuals*	Other Male Manuals	Female Manuals
High Dominance	99.6	98.4	86.5
Low Dominance	95.0	93.1	80.7

Note (i)* equals significant at the 90% level of confidence.

TABLE A17.8 TOTAL OVERALL QUIT RATES AND TURNOVER

	Dominant Plant	Control Group
Turnover rate	12.4	13.6
Quit rate	7.7	9.0

TABLE A17.9 AVERAGE SCREENING INDICES

Work Group	Dominant Plants	Dominant and Control
Skilled Male Manuals	14.2	14.0
Other Male Manuals	12.9	12.9
Female Manuals	12.5	13.0

TABLE A17.10 UK VERSUS NON-PUBLIC SECTOR DOMINANT PLANT UNIONISATION LEVELS

Average Levels of Unionisation UK Manufacturing Industry	Unionisation Skilled Male Manuals, Dominant Plants	Unionisation Other Male Manuals Dominant Plants	Unionisation Female Manuals, Dominant Plants
62.2%	97.7%	96.3%	84.0%

TABLE A17.11 TOTAL CURRENT AVERAGE EMPLOYMENT IN DOMINANT PLANTS AND CONTROL GROUP PLANTS

	Average Number of Employees
Dominant Plant Sample	5516
Control Group Sample	2438

Notes. (i) The difference is significant at the 95% confidence level.
(ii) The number of employees was calculated by adding male and female part and full-time workers.
(iii) This pattern was repeated 2 years previously.

TABLE A17.12 PERCENTAGE OF MANUAL EMPLOYEES IN DOMINANT AND CONTROL GROUPS

	Proportion of Manual Employees
Dominant Plant Sample	82.9
Control Group Sample	70.3

Note. (i) The difference is significant at the 95% confidence level.

TABLE A17.13 THE RELATIONSHIP BETWEEN HIGH AND LOW DOMINANCE LIMs AND PERFORMANCE OF UV EQUATION

Nature of Equation Fit	Low Dominance	High Dominance	Total
Good fit	10(12.3)	5(14.7)	15
Bad fit	71(87.7)	29(85.3)	100
Total	81(100)	34(100)	115

Note (i) No significant difference on CHI squared test at any meaningful confidence interval.
(ii) The figures in brackets relate to percentages

TABLE 17.14 THE PROPORTION OF GOOD AND BAD FIT EQUATIONS BY REGION

Region	Good Fit	Bad Fit	Total Number of Observations
Scotland	7(22.6)	27(77.4)	31
Wales	3(16.7)	15(83.3)	18
Northern	9(33.3)	18(66.7)	27
N. West	8(21.6)	29(78.4)	37
Yorkshire	3(13.6)	19(86.4)	22
W. Midlands	1(4.5)	21(95.5)	22
E. Midlands	3(11.5)	23(88.5)	26
E. Anglia	0(0.0)	12(100)	12
S. East	12(21.8)	43(78.2)	55
S. West	7(17.9)	32(82.1)	39
Total	53(18.3)	236(81.7)	289

BIBLIOGRAPHY

BOOKS, MONOGRAPHS AND ARTICLES IN BOOKS OR READINGS

ALLEN, K. & YUILL, D. 1975 — The Accuracy of Pre - 1971 Employment Data. Discussion papers in Economics, University of Glasgow No 12.

BACON, R. & ELTIS, W. 1976 — Britain's Economic Problem : Too Few Producers. London, McMillan.

BECKER, G. 1964 — Investment in Human Capital: Effects on Earnings, in Burton, et al Readings in Labour Market Economics, New York, Holt.

BLAUG, M. 1970 — An Introduction to the Economics of Education. London, Allan Lane.

BLAUNER, R. 1964 — Alienation and Freedom : The Factory Worker and His Industry. Chicago, University of Chicago Press.

BLUMENFELD, H. 1957 — The Economic Base of the Metropolis : Conceptual Remarks on the Basic-Non-Basic Concept, in Spreingen, P.D. (ed). The Modern Metropolis : Its Origins, Growth, Characteristics and Planning, Boston, MIT Press.

BORSTON, I. CLEGG, H. & RIMMER, M. 1975 — Workforce and Union. London, Heinemann Educational (Warwick Studies in Industrial relations).

BOLTON, J.E. 1971 — Committee of Enquiry on Small Firms. London, HMSO.

BROWN, A. J. 1976 — In Warswick, GDN. The Concept and Measurement of Involuntary Unemployment. London, Allen and Unwin.

BROWN, P. & SCHOENKER, R.A. 1971 — The Structure of Organisation. New York, Basic Books.

BUNTING, R.L. 1962 — Employer Concentration in Local Labour Markets. Chapel Hill, North Carolina University Press.

BURTON, J.F. 1971 — Readings in Labour Market Analysis. New York, Holt, Rinchart and Wineton.

CHESHIRE, P.C. 1979 — Regional Unemployment Differences in GB, in Regional Papers 11. National Institute for Economic and Social Research, London, Cambridge University Press.

CORINA, J. 1972 — Labour Market Economics, A Short Survey of Recent Theory. London, Heinemann Educational Books.

DEPARTMENT OF EMPLOYMENT AND PRODUCTAVITY, 1964. — Labour Costs in Britain in 1964. London, HMSO.

DOERINGER, P.B. & PIORI, M.J. 1971 — Internal Labour Markets and Manpower Analysis. Lexington, Mass,

DONOVAN, T.N. 1968 — The Royal Commission on Trade Union and Employers Associations. London, HMSO.

DUNNEL, K. & HEAD, K. 1975 — Employers and Employment Services. London, Office of Population Consesus and Surveys.

FELTNER, W. 1949 — Competition Among the Few : Oligopoly and Similar Market Structures. New York, Knopf.

FOSTER, J.I. 1974 — The Realtionship Between Unemployment and Vacancies in Great Britain (1958-72) : Some Further Evidence, in Inflation and Labour Markets edited by Laidler, D.and Purdy, D.L. Manchester University Press.

GORDON, D.M. 1972 — Theories of Poverty and Unemployment : Orthodox, Radical and Dual Labour Market Perspectives. London, Heath.

HERRON, F. 1975 — Labour Market in Crisis : Redundancy at Upper Clyde Shipbuilders. London, MacMillan.

HOLLINGSWORTH, T.H. 1970 — Migration University of Glasgow Social and Economic Studies, Occassional Paper No 12.

HUNTER, L.C. with BEAUMONT, P.B. 1978 — *Labour Shortages and Manpower Policy.* London, HMSO.

HUNTER, L.C. & ROBERTSON, D.J. 1969 — *The Economics of Wages and Labour.* London, MacMillan.

INGHAM, G.K. 1970 — *The Size of Industrial Organisation and Worker Behaviour.* Cambridge, Cambridge University Press.

JOHNSON, J. 1972 — *Econometric Methods* New York, McGraw Hill.

KELEJIAN, H.H. & OATS, W.G 1974 — *An Introduction to Econometric Methods.* London, Harper & Row.

LANE, T. & ROBERTS, K 1971 — *Strike at Pilkingtons.* London, Collins/Fontana.

LESTER, R.A. 1955 — *Adjustment to Labour Shortages.* Princetown, Princetown University Press.

LEVER, W.F. 1977 — *The Definition of Dominant Plants* Unpublished Internal Working Paper, Department of Social and Economic Research, Glasgow University.

LEVER, W.F. *et al* 1979 — *The Dominant Plant and Urban Development.* Social Science Research Council, Project Final Report.

MACKAY, D.I. *et al* 1971 — *Labour Markets Under Different Employment Conditions,* London, George Allen and Unwin Ltd.

MULVEY, C. 1978 — *The Economic Analysis of Trade Unions.* Oxford, Martin Robinson.

NATIONAL BOARD FOR PRICES AND INCOMES, 1971 — *General Problems of Low Pay.* Report No 169, Cmnd 4648, HMSO.

NORRIS, G.M & BARRON, R.D. — *Studies of Poverty among the Sub-Employed.* Social Science Research Council, Project Final Report.

NORRIS, G.M. 1976 — *Paternlism, Paternalist Capitalism and Dominant Plants.* Internal Working Paper, Department of Social and Economic Research Glasgow University.

PARSONS, D.O. 1977 — Models of Labour Market Turnover: A Theoretical and Empirical Survey, in Ehrenberg, R.G. (ed) Research in Labour Economics Vol 1 1977. Greenwick Connecticut, JAI Press.

PENCAVEL, J.H. 1977 — Work Effort on the Job Screening and Alternative Methods of Remuneration. In Ehrenburg, R.G. Research in Labour Economics Vol 1 1977, Greenwick Connecticut, JAI Press.

PERLMAN, R. 1969 — Labour Theory. New York, John Wiley.

PISSARIDES, C.A. 1976 — Labour Market Adjustment: Microeconomic Foundations of Short Run Neoclassical and Keynesian Dynamics. Cambridge, Cambridge University Press.

PROCTOR & THORNTON 1961 — Training : A Handbook For Line Managers. American Management Association, New York.

REES, A. 1962 — The Economics of Trade Unions. Cambridge, Cambridge University Press.

REES, A. 1973 — The Economics of Work and Pay. New York, Harper.

REES, A. & SHULTZ, G.P. 1970 — Workers and Wages in An Urban Labour Market. Chicago, University of Chicago Press.

REID, G.L. & ROBERTSON, D.J. 1965 — Fringe Benefits, Labour Costs and Social Security. London, Allen and Unwin.

REYNOLDS, L.G. 1951 — The Structure of Labour Markets : Wages and Labour Mobility in Theory and Practice. New York, Harper.

ROSS, A.M. 1948 — Trade Union Wage Policy. Berkeley, University of California Press.

SAYLES, L.R. 1958 — The Behaviour of Industrial Workgroups: Prediction and Control. London, Chapman & Hall.

SCHERER, F.M. 1970 — Industrial Market Structure and Economic Performance. Chicago, Rand.

SCOTTISH COUNCIL (DEVELOPMENT AND INDUSTRY) 1979 — Manpower Shortages in Scottish Manufacturing Industry. Edinburgh, Scottish Council.

SERBIEN 1961 — The Educational Activities of Business. Washington, Council for Education.

SMART, M.W. 1976 — Labour Market Areas: Uses and Definitions. Progress in Planning. Vol 12 No 4, Oxford, Ferguson Press.

THUROW, L.C. 1975 — Generating Inequality. London, MacMillan Press.

URWICK ORR AND PARTNERS 1965. — A Survey of Training Practices in the Engineering Industry. London.

VAN DE VALL, 1970 — Labour Organisations. Cambridge, Cambridge University Press.

VENABLES, P. & WILLIAMS, W.J. 1961 — The Smaller Firm and Technical Education. London.

WONNACOTT, T.H. & WONNACOTT, R.T. 1970 — Econometrics. London, Wiley.

WOODWORD, J. 1970 — Industrial Organisation : Theory and Practice. London, Oxford University Press.

JOURNAL ARTICLES

BAIN, G.S. & ELSHEIKH, F. 1980 — Unionisation in Britain; An Inter-Establishment Analysis Based on Survey Data. British Journal of Industrial Relations. Vol 18, No 2.

BARRON, J.M. 1975 — Search in the Labour Market and the Duration of Unemployment. American Economic Review No 65.

BEER, M. 1964 — Organisational Size and Job Satisfaction. Journal of the Academy of Management.

BERHOWITZ, M. 1954 — The Economics of Trade Union Organisation and Administration. Industrial and Labour Relations Review. Vol 7.

BOWDEN, R.J. 1980 The Existence of Sectoral Stability of UV Loci. Economica Vol 47.

BOWERS, J.K. et al The Change in the Relationship Between Unemployment and Earnings increases : A Review of Some Possible Explanations. National Institute Economic Review, No 54.

BRONFENBRENNER, M. 1956 Potential Monopsony in Labour Markets. Industrial and Labour Relations Review No 9.

DEVINE, E.J. 1969 Manpower Shortages In Local Government. American Economic Review Vol 59.

DOW, J.C.R. & DICKS-MURREAUX L.A. 1958 The Excess Demand for Labour : A Study of Conditions in Great Britain. Oxford Economic Papers Vol 10.

EISELE, C.F. 1973-74 Organisational Size, Technology and the Frequency of Strikes. Industrial and Labour Relations Review Vol 27.

EVANS, A. 1977 Notes on the changing Relationship Between Registered Unemployment and Notified Vacancies : 1961-1966 and 1966-1971. Economica No 44.

FLANDERS, A. 1965 Industrial Relations : Whats Wrong with the System. Institute of Personnel Management.

FOGARTY, M.P. 1965 Wage and Salary Policies for Recruitment. British Journal of Industrial Relations Vol 3.

FOLTMAN, F.F. 1964 Apprenticeship and Skill Training - A Trial Balance. Monthly Labour Review No 87.

FUCHES, V.R. 1967 Hourly Earnings Differentials by Region and Size of City. Monthly Labour Review Vol 90.

GEORGE, K.D. et al The Size of Work Unit and Labour Market Behaviour. British Journal of Industrial Relations. Vol 15 No 2.

GOODMAN, J. 1970 — The Definition And Analysis of Local Labour Markets : Some Problems. British Journal of Industrial Relations Vol 8.

GRONAU, R. 1971 — Information and Frictional Unemployment. American Economic Review No 61.

HALL, R.A. et al, 1967 — Organisational Size, Complexity and Formalisation. American Sociological Review Vol 36.

HAWORTH, C.I. & RASMUSSEN D.W. 1971 — Human Capital and Inter-Industry Wages in Manufacturing. Review of Economics and Statistics Vol 53.

HOLDEN, K. & PEEL, D.A. 1975 — The Determinants of Unemployment and the UV Relationship. Applied Economics No 7

HOOD, W. & REES, R.D. 1975 — Inter-Industry Wage Levels in UK Manufacturing Manchester School Vol 13.

HUGHES, J.J. 1974 — The Use of Vacancy Statistics in Classifying and Measuring Structural and Frictional Unemployment in Great Britain 1958-1972 The Bulletin of Economic Research.

HYMAN, G. & PALMER, D. 1980 — A Causal Analysis Unemployment and Vacancies in British Regions 1969-1974 Regional Studies. Vol 14, No 5.

INDIK, B.P. 1963 — Some Effects of Organisational Size on Member Attitudes and Behaviour. Human Relations Vol 16, No 4.

KASPER, H. 1967 — The Asking Price of Labour and the Duration of Unemployment. Review of Economics and Statistics Vol 49.

LEES, D. 1972 — Very Small Firms and the Training of Engineering Craftsmen - Some Recent Findings British Journal of Industrial Relations Vol 10.

LESTER, R. 1967 — Pay Differentials By Size of Establishment. Industrial relations, Vol 7.

LEVINSON, H. 1967 — Unionism, Concentration and Wage Changes : Towards a Unified Theory, Industrial and Labour Relations Review Vol 20.

LIPPMAN, S.A. & McCOLL, J.J. June and September 1976 — The Economics of Job Search : A survey Economic Enquiry.

LITZ, M.A. 1977 — Quit Rates and the Quality of Industrial Wage Structures. Industrial Relations Vol 16.

McCORMICK, B.J. 1977 — Methods of Wage. Payment, Wage Structures and the Influence of Factor and Product Markets. British Journal of Industrial Relations Vol 16.

MASTERS, S.H. 1969 — An Inter-Industry Analysis of Wages and Plant Size. Review of Economics And Statistics.

MAYHEW, K. 1976 — Plant Size and the Earnings of Manual Workers in Engineering. Oxford Bulletin of Economics and Statistics. Vol 38

METCAFF, D. MICHELL, S. & RICHARDSON, R. 1976 — The Structure of Hours and Earnings in British Manufacturing Industry. Oxford Papers Vol 28.

METCAFF, D. 1977 — Union Incomes Policy and Relative Wages in Britain. British Journal of Industrial Relations Vol 15.

PENCAVEL, J.H. 1972 — Wages, Specific Training and Labour Turnover in US Manufacturing Industry. International Economic Review No 1.

PRIAS, S.J. 1978 — The Strikeproness of Large Plants in Britain. Journal of the Royal Statistical Society. Series A Vol 141.

PRICE, R. & BAIN, G.S. 1976 — Union Growth Revisited : 1948 - 1974 British Journal of Industrial Relations Vol 14.

PRYOR, F.L. 1972 — Size of Production Establishments in Manufacturing Economic Journal Vol 82.

REVANS, R.W. 1956 — Industrial Morale and Size of Unit. Political Quarterly Vol 27 No 3.

REID, G. 1972 Job Search and the Effectiveness of Job Finding Methods. Industrial and Labour Relations Review Vol 25.

REYNOLDS, L. 1945 The Supply of Labour to the Firm. Quarterly Journal of Economics No 60.

ROBINSON, D. 1970 Myths of the Local Labour Market, Personnel Vol 1 No 1.

SALT, 1967 The Impact of the Ford and Vauxhall Plants on the Employment Situation of Merseyside. Tydschrift Voor Economische En Sociale Geografie No 58.

SAWYER, M.C. 1973 The Earnings of Manual Workers : A Cross Section Analysis. The Scottish Journal of Political Economy Vol 20 No 2.

SEIDMAN et al (LONDON & KARSH) 1951 Why Workers Join A Union. Annals of the American Academy of Political and Social Services.

SHISTER, J. 1953 The Logic of Union Growth. Journal of Political Economy Vol 61.

SHOREY, J. 1976 The Size of Work Unit and Strike Behaviour. Economica Vol 43.

SOFFER, B 1959 On Union Rivalries and the Differentation of Wage Patterns. Review of Economics and Statistics Vol 41.

STIGER, G.J. 1962 Information in the Labour Market. Journal of Political Economy Vol 70 (Supplement).

STOIKOV, V. & RIAMON, R.L. 1968 Determinants of Differences in the Quit Rate Among Industries. American Economic Review Vol 58.

TALLACCI, S. 1960 Organisational Size, Individual Attitudes and Behaviour ; An Empirical Study Administrative Science Quarterly Vol 5 No 3.

THIRWALL, A.P. 1969 — Types of Unemployment: With Special Reference to Non Demand Deficient Unemployment in GB. Scottish Journal of Political Economy Vol 19 No 1.

ULMAN, L. 1955 — Marshall and Friedman on Union Strength. Review of Economics and Statistics Vol 37.

WARREN, R.S. 1977 — The Behaviour of Unemployment and Unfilled Vacancies in GB: A Search Turnover View. Applied Economics Vol 9.

WEISS, L.W. 1966 — Concentration and Labour Earnings. American Economic Review Vol L VI.

WILLIAMSON, O.E. 1967 — Hierarchical Control and Optimum Firm Size. Journal of Political Economy Vol 75.

ZELLNER A 1962 — An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias. Journal of the American Statistical Association Vol 57.

UNPUBLISHED THESES

BEAUMONT, P.B. 1976 — The Operation of Assisted Labour Mobility Policy in a High Unemployment Region. Unpublished phD, Glasgow University.

GILES, W.J. 1968 — A Critical Assessment of the Initial Impact of the Industrial Training Act, 1964 On Selected Industrial Training Schemes. Unpublished MA Theses, Nottingham University.

WOLITZ, L. 1970 — An Analysis of the Labour Market For Policeman. Unpublished PhD, University of California.

INSTRUCTIONS FOR COMPLETION OF THE QUESTIONNAIRE

This questionnaire contains two types of questions:

(i) Questions which require an answer consisting of an informal opinion which may be answered quickly by the personnel manager, or similar staff member, without consulting records or collecting information.

(ii) Questions which require more precise replies which can only be adequately answered from the firm's records.

In some cases precise answers for these questions may be unavailable or may require excessive research by the company. Good estimates, within say 5% of the actual figure, are acceptable here.

If the company decides it is unwilling or unable to undertake the small amount of information collection needed to answer the second type of question, a questionnaire which contains only answers to the first type of question would still be useful to us.

There are four different ways in which answers to questions are actually written on the questionnaire itself. These are:

(i) a small number of completely open ended questions where answers are to be written out in full in the space provided (e.g. Q.B5);

(ii) questions which require the respondent to ring a printed number placed opposite the relevant answer (e.g. Q.B3);

(iii) questions which require the respondent to tick an empty box opposite the appropriate answer (e.g. Q.B2);

(iv) numerical answers to be written in an appropriate box or table (e.g. Q.A3); where a grid is provided the figures should be right justified (i.e. 3 would be written as | 0 | 3 |).

All rows or columns with the heading CODE should be left blank.

			1

QUESTIONNAIRE

SECTION A: GENERAL BACKGROUND

A1. Please complete the table below by writing down the main product(s) produced by this establishment and the percentage of total output (in value terms) represented by each product.

Product	CODE	% of output
5		
11		
17		
23		
All others (specify) 29		

34

A2. Please complete the following table showing the numbers employed in this establishment over the past two years.

N.B. (i) Take any recent month for current employment and the same month one year and two years ago.

(ii) Part time is taken to mean employed for less than 30 hours, as defined by the new earnings survey.

Current Employment				Employment 12 months ago				Employment 24 months ago			
Males		Females		Males		Females		Males		Females	
Full time	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time	Part time

35 40 42 46 50 55 57 61 65 70 72 76 79

		0	2

A3. Please complete the table below relating to the composition of the current manual workforce in the establishment.

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Numbers currently employed			
	5	9	13-16

N.B. Skilled refers to all jobs in which time served men are employed or in which a period of at least two years training is required.

A4. What was the total number of employees in this establishment five years ago?

17-21

A5. In what year was this establishment set up in this area?

SECTION B: LABOUR TURNOVER AND RECRUITMENT

B1. For each occupational group give the total number of employees who left the establishment in a recent 12-month period and the total who left of their own accord; that is, those who did not leave due to redundancy, dismissal, retirement or death.

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Total leavers 26			
Total left of own accord 35			

43

B2. In the following table different methods of recruiting labour are listed. For each of the broad categories given in each column, please tick:

(i) which recruitment methods have been used over the last six months;

(ii) which methods are used when this type of labour is difficult to recruit;

(iii) which methods are used when this type of labour is easy to recruit.

N.B. In this table the following abbreviations are used for the skill categories:

SMM = Skilled male manual employees
OMM = Other male manual employees (i.e. semi-skilled and unskilled)
FM = Female manual employees

A3. Please complete the table below relating to the composition of the current manual workforce in the establishment.

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Numbers currently employed			
	5	9	13-16

N.B. Skilled refers to all jobs in which time served men are employed or in which a period of at least two years training is required.

A4. What was the total number of employees in this establishment five years ago?

17-21

A5. In what year was this establishment set up in this area?

SECTION B: LABOUR TURNOVER AND RECRUITMENT

B1. For each occupational group give the total number of employees who left the establishment in a recent 12-month period and the total who left of their own accord; that is, those who did not leave due to redundancy, dismissal, retirement or death.

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Total leavers 26			
Total left of own accord 35			
			43

B2. In the following table different methods of recruiting labour are listed. For each of the broad categories given in each column, please tick:

(i) which recruitment methods have been used over the last six months;

(ii) which methods are used when this type of labour is difficult to recruit;

(iii) which methods are used when this type of labour is easy to recruit.

N.B. In this table the following abbreviations are used for the skill categories:

SMM = Skilled male manual employees
OMM = Other male manual employees (i.e. semi-skilled and unskilled)
FM = Female manual employees

A3. Please complete the table below relating to the composition of the current manual workforce in the establishment.

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Numbers currently employed			

5 9 13-16

N.B. Skilled refers to all jobs in which time served men are employed or in which a period of at least two years training is required.

A4. What was the total number of employees in this establishment five years ago?

17-21

A5. In what year was this establishment set up in this area?

SECTION B: LABOUR TURNOVER AND RECRUITMENT

B1. For each occupational group give the total number of employees who left the establishment in a recent 12-month period and the total who left of their own accord; that is, those who did not leave due to redundancy, dismissal, retirement or death.

		Skilled Male Manuals	Other Male Manuals	Female Manuals
Total leavers	26			
Total left of own accord	35			

43

B2. In the following table different methods of recruiting labour are listed. For each of the broad categories given in each column, please tick:

(i) which recruitment methods have been used over the last six months;

(ii) which methods are used when this type of labour is difficult to recruit;

(iii) which methods are used when this type of labour is easy to recruit.

N.B. In this table the following abbreviations are used for the skill categories:

SMM = Skilled male manual employees
OMM = Other male manual employees (i.e. semi-skilled and unskilled)
FM = Female manual employees

Recruitment Method	Methods used in Last Six Months			Methods used when Difficult to Recruit			Methods used when Easy to Recruit		
	SMM	OMM	FM	SMM	OMM	FM	SMM	OMM	FM
Advertise in local press 44									
Advertise in national press 53									
Notify vacancy to local Job Centre/Employment Office 62									
Notify Job Centres in other areas 71									
3 Use Employment Transfer Scheme 5									
Contact Skill Centre 14									
Contact schools/technical colleges 23									
Use private employment agencies 32									
Take 'on spec' applicants 41									
Use list of previous applicants 50									
Contact former employees 59									
Recommendations from existing employees 68									
4 Upgrade/train/transfer existing employees 5									
Offer higher earnings than other local employers 14									
Other 23									

B3. For each occupational group indicate how often each of the following methods is used to select suitable employees from all applicants for vacancies.

Selection Method	Skilled Male Manuals			Other Male Manuals			Female Manuals		
	Rarely Used	Occasion-ally Used	Often Used	Rarely Used	Occasion-ally Used	Often Used	Rarely Used	Occasion-ally Used	Often Used
erviewed by eman 32	1	2	3	1	2	3	1	2	3
erviewed by ber of per-nel dept. 35	1	2	3	1	2	3	1	2	3
erviewed by er managerial ff 38	1	2	3	1	2	3	1	2	3
nal test of ll or compe-ce 41	1	2	3	1	2	3	1	2	3
ain references n previous loyers 44	1	2	3	1	2	3	1	2	3
ical test 47	1	2	3	1	2	3	1	2	3
er: specify 50	1	2	3	1	2	3	1	2	3

52

B4. Many large employers find that employees apply for jobs with the company by turning up at the gate 'on spec' even when no vacancies are advertised or exist. What does the establishment do with such 'on spec' applicants when there are no vacancies?

	Skilled Male Manuals	Other Male Manuals	Female Manuals
No details of any on spec applicants kept	1	1	1
Details of most suitable applicants only kept	2	2	2
Details of almost all on spec applicants kept	3	3	3
Other: specify	4	4	4
	53	54	55

IF 1 IS NOT RINGED AT ALL GO TO Q.B6

B5. Why are no details of 'on spec' applicants kept?

56-57

B6. How is the list of the details of 'on spec' applicants used when an appropriate vacancy arises?

Use of 'On Spec' List	Skilled Male Manuals	Other Male Manuals	Female Manuals
Make very little use of list	1	1	1
Contact most recent on spec applicants on list	2	2	2
Contact applicants on list who have been on it for the longest time	3	3	3
Contact best qualified/most skilled applicants on list	4	4	4
Varies/No clear pattern	5	5	5
	58	59	60

B7. Amongst local employees and employers do you have a reputation for employing in skilled jobs men who are on average

Highly skilled	1
About average skill	2
Less skilled	3
No particular reputation	4
Don't know	5

61

B8. Amongst local employees and employers do you have a reputation for employing in semi-skilled and unskilled manual jobs employees who are on average

Above average quality	1
About average quality	2
Less than average quality	3
No particular reputation	4
Don't know	5

62

SECTION C: LABOUR SHORTAGES

C1. During the past two years has the company experienced any difficulty in recruiting any type of manual employee?

Recruitment Difficulty	Skilled Male Manuals	Other Male Manuals	Female Manuals
No Difficulty	1	1	1
Some Difficulty	2	2	2
	63	64	65

IF 1 RINGED FOR ALL GROUPS GO TO Q.C6.

C2. Below are listed some possible reasons for having difficulty recruiting employees to your firm. How important do you think each of these reasons is for this establishment?

Reasons		Very Important		Quite Important		Not Important at all
Employees attracted away from area by higher pay	66	1	2	3	4	5
Employees attracted away by other local employers		1	2	3	4	5
Small size of local labour market		1	2	3	4	5
Some local firms not contributing sufficiently to training		1	2	3	4	5
Union restrictions on efforts to increase labour supply		1	2	3	4	5
Inadequate training place at local skill centres		1	2	3	4	5
Skill centre training not related to local requirements		1	2	3	4	5
General rise in demand for these types of employee		1	2	3	4	5
Journey to work difficulties for possible employees		1	2	3	4	5
Potential recruits dislike working in large plants		1	2	3	4	5
Work involves anti-social hours..		1	2	3	4	5
Unemployed are physically unfit for these jobs		1	2	3	4	5
Unemployed are of poor quality		1	2	3	4	5
Cannot attract new workers because of housing problems		1	2	3	4	5
Other: specify	80	1	2	3	4	5

C3. Has the firm used any of the actions listed below to ease recruitment difficulties in the last two years? Tick where appropriate.

Increasing apprentice recruitment	5	
Increasing training in firm		
Upgrading less skilled employees		
Reducing standards required of recruits		
Subcontracting some work		
Investing in labour-saving equipment		
Using more overtime		
Using part-time employees		
Using seasonal or temporary employees		
Using retired employees		
Transferring from other branches of the company		
Increasing relative earnings for particular groups		
Improving working conditions		
Attracting employees from outside the local area		
Using Employment Transfer Scheme		
Other: specify	20	

C4. For each occupational group in which you have experienced recruitment difficulties are these problems temporary or have they persisted over a long time?

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Temporary	1	1	1
Persistent	2	2	2
No recruitment difficulty	3	3	3
	21	22	23

C5. For each occupational group in which you have experienced recruitment difficulties do other employers in this area also suffer from these difficulties?

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Yes	1	1	1
No	2	2	2
Don't know	3	3	3
Other employers do not recruit this type of labour	4	4	4
No recruitment difficulty with this occupational group	5	5	5
	24	25	26

C6. Has the local Employment Office or Job Centre been particularly helpful in filling any vacancies in the last two years?

Yes	1
No	2

27

IF 2 RINGED GO TO SECTION D.

C7. Please give brief details of how the local Employment Office or Job Centre has helped with recruitment.

28-29

SECTION D: TRAINING

D1. How many full-time training staff (i.e. staff whose duties relate exclusively to their training function) does the plant provide?

30-32

D2. Are training courses provided for the following groups? Tick where appropriate.

Apprentices 33	
Post Apprentices	
Skilled employees (non-apprenticed)	
Semi-skilled employees	
Unskilled employees	
Clerical employees	
Technical staff	
Supervisory grades	
Management	
None of these 42	

D3. Are external courses used in the firm's training programme?

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Yes	1	1	1
No	2	2	2
	43	44	45

D4. Do you provide formal training facilities to other firms?

Yes	1
No	2

46

D5. How much training do you undertake, on a per capita basis, relative to other firms in the area?

more than average	1
about average	2
less than average	3
don't know	4

47

SECTION E: WAGES/EARNINGS

E1. For each occupation group tick which elements within the pay structure are determined at plant level.

Elements of Pay Structure		Skilled Male Manuals	Other Male Manuals	Female Manuals
Basic rate	48			
Overtime rate	51			
Shift premia	54			
Production bonuses, incentive bonuses, P.B.R.	57			

E2. Taking account of your answers to the previous question, what percentage of total earnings for each occupation group is determined at plant level?

		Skilled Male Manuals	Other Male Manuals	Female Manuals
Percentage of total earnings determined at plant level	60			

E3. For each occupational group select a specific occupation, preferably one in which there are a large number of employees (for example, a fitter in the skilled category) and for a recent week please list the following in the table below:

(i) the basic hourly rate (including phase one and phase two supplements if unconsolidated);

(ii) an estimation of average weekly earnings;

(iii) indicate by a tick whether the earnings estimate you have given includes elements for

(a) overtime
(b) shift payments
(c) payments related to output

			6

		Skilled Male Manuals	Other Male Manuals	Female Manuals
Specific Occupation Selected				
CODE	5			
Basic Hourly Rate (pence)	14			
Average Weekly Earnings (pounds)	23			
Element for Overtime	32			
Element for Shift Pay	35			
Element for Payment Related to Output	38			

40

E4. Please specify by ticking whether any employees in the listed occupational groups are paid either a length of service supplement or any individual merit supplements.

		Skilled Male Manuals	Other Male Manuals	Female Manuals
Length of service supplement	41			
Individual merit payment	44			

46

E5. Approximately what percentage of each occupational group are union members?

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Percentage who are union members			

47 55

E6. Does the establishment carry out regular surveys into the wages and earnings of manual employees in:

		Yes	No
Other firms in the same industry in the same area	56	1	2
Other firms in the area not in the industry		1	2
Other firms in the industry not in the area		1	2
Other firms not in the area and not in the same industry	59	1	2

E7. If no such wage survey is carried out, why not?

60-61

E8. In comparison with other firms in <u>this area</u> do you think that the level of earnings in this establishment for the following groups is:

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Amongst the highest	1	1	1
Above average	2	2	2
About average	3	3	3
Below average	4	4	4
Amongst the lowest	5	5	5
Don't know	6	6	6
	62	63	64

E9. In comparison with other firms in <u>the industry</u> but not in the same area do you think that the level of earnings in the establishment of the following groups is:

	Skilled Male Manuals	Other Male Manuals	Female Manuals
Amongst the highest	1	1	1
Above average	2	2	2
Average	3	3	3
Below average	4	4	4
Amongst the lowest	5	5	5
Don't know	6	6	6
	65	66	67

E10. How important do you consider the following factors to be in the determination of earnings for manual employees in this establishment?

Factor	Very important	Important	Quite important	Of little importance	Not important at all
abour recruitment and etention problems caused r the action of other lants in the area 68	1	2	3	4	5
e earnings of other firms mpeting in the same roduct market	1	2	3	4	5
ion pressure for comparaility with other firms in e area	1	2	3	4	5
ion pressure for comparaility with firms in the me industry but a different rea	1	2	3	4	5
ion pressure for comparaility with other plants in e same company	1	2	3	4	5
ion pressure for comparaility with other firms not the same area or industry	1	2	3	4	5
overnment Incomes Policy	1	2	3	4	5
e cost of living 75	1	2	3	4	5

SECTION F: FRINGE BENEFITS

			7

F1. Does this establishment pay sickness benefits to any manual employees during periods of absence from work due to sickness?

Yes	1
No	2

5

IF 2 RINGED GO TO Q.F4.

F2. Please specify which elements of the sick pay scheme(s) for manual employees are determined at plant level either through a collective agreement or at management's discretion.

Element of Sick Pay Scheme	Determined at Plant Level			Not determined at Plant Level
	Collective Agreement	Management Discretion	Combination	
Types of employees eligible for sickness payments 6	1	2	3	4
Level of payment which employee receives	1	2	3	4
Length of time for which benefit is paid 8	1	2	3	4

F3. For each occupational group specify the maximum level of weekly payment to which an employee is entitled when absent from work due to sickness.

	Skilled Male Manuals		Other Male Manuals		Female Manuals	
Maximum level of weekly payment						
CODE						

9 14

N.B. Answers of the form 'full basic pay minus national insurance benefits' are acceptable here.

F4. Does the establishment have an occupational pension scheme for any of its manual employees?

Yes	1
No	2

15

IF 2 RINGED GO TO Q. F7.

F5. Please specify which elements of the occupational pension scheme(s) for manual employees are determined at plant level either through a collective agreement or at management's discretion.

Element of Pension Scheme	Determined at Plant Level			Not determined at Plant Level
	Collective Agreement	Management Discretion	Combination	
Types of employees eligible for scheme 16	1	2	3	4
Level of pension paid 17	1	2	3	4

F6. For each occupation group specify the maximum level of pension to which an employee is entitled.

	Skilled Male Manuals		Other Male Manuals		Female Manuals	
Maximum level of pension entitlement						
CODE						

18 23

N.B. Answers of the form '$^1/_{80}$th of final weekly earnings for each year of service' are acceptable here.

F7. Does the company own any housing in this area which is occupied by manual employees?

Yes	1
No	2

24

IF 2 RINGED GO TO Q.F9.

F8. How many manual employees currently live in such accommodation?

25-27

F9. Does the company run a sports, social or recreational club which manual employees are entitled to join?

Yes	1
No	2

28

IF 2 RINGED GO TO Q.F11.

F10. For each such club please give details of

(i) the main purposes of the club;

(ii) whether the club is self-financing from members' subscriptions or whether it is partly subsidised by the company;

(iii) the approximate total level of the subsidy from the company (to the nearest hundred pounds) over the last financial year.

Name of Club	Main Purpose	CODE	Self-financing	Subsidised	Level of Subsidy
	29		1	2	
	35		1	2	
	41		1	2	

F11. In comparison with other employers in this area are the fringe benefits offered by this company to its manual employees:

More extensive than other firms	1
About the same as other firms	2
Less than other firms	3
Don't know	4

47

F12. What percentage of the total labour force in the establishment are registered disabled persons?

48-49

F13. What percentage of the total labour force are over normal retirement age?

50-51

F14. Does the establishment reserve any jobs for its workforce who become disabled or have difficulty with their current jobs for health reasons?

Yes	1
No	2
Sometimes	3

52

IF 2 RINGED GO TO Q.F16.

F15. Please specify which jobs these are (i.e. give job title) and the number of employees currently doing each such job.

Job Title	CODE		Number currently employed	
53				
58				
63				
68				
73				

77

			8

F16. Has this establishment in the last year made any contributions to local charitable organisations?

Yes	1
No	2

5

IF 2 RINGED FINISH

F17. Specify the total number of local charities to which a contribution has been made by the establishment in the last year.

6-8

F18. For each of the three local charities to which the largest contribution has been made by the establishment, please give brief details of the main purposes of the charity and the approximate size of the contribution (to the nearest one hundred pounds) over the last year.

Purpose of Charity	CODE		Contribution Size		
9					
14					
19					

23

24

33