

**Responses to Changes in University Funding: A
Case Study of Two Universities**

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Abstract

This thesis examines the effects on university teaching and research of recent changes to the method of funding universities. The effects of funding change are investigated through case studies of two universities, one an elite institution rated highly in all of the research assessment exercises and the other a non-elite institution rated low in the research assessment exercises. Within the universities a sample of staff was selected to fill in a questionnaire about their perceptions of change to teaching and research. In addition a small number of senior staff in each of the universities was interviewed.

The analysis of the two sets of questionnaires revealed a remarkable degree of similarity between the two universities. For research, it appears that the time spent on research had fallen for most staff, that there had been a significant shift away from basic and toward more applied research and that the quality of research was perceived by most staff to have risen or remained the same. For teaching, there had been a large increase in all levels of teaching and a reduction in the level of support for students. There had also been a massive increase in the amount of administration required of staff. The interviews with senior staff supported these findings, but revealed subtler changes taking place too. For example, the non-elite university was having to adopt different student recruitment policies, different staffing policies and different teaching arrangements to those found in the elite institution. It was also claimed that the funding exercise was changing the nature of the research process in the Humanities. The conclusion of the thesis is that funding changes are affecting the quality and type of research and teaching provided in universities, but universities with different backgrounds may be affected differently.

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Introduction

This thesis examines the effects on teaching and research of the university funding changes introduced in 1985, through a comparison of two contrasting universities. The need for research in this area stems from the funding changes introduced by the University Grants Committee (UGC) in 1985 when it made its first attempt to assess the quality of research undertaken in universities in what was then called the Research Selectivity Exercise, subsequently known as the Research Assessment Exercise (RAE). The exercise was introduced in response to pressure from the Government for universities to be more accountable for the public resources that they used and for the limited resources available to universities to be used in a way that ensured 'value for money'. There may also have been concern within the UGC itself about the way in which funds were disbursed to the universities. This concern was indicated in an advisory paper sent from the UGC to the Government in the Autumn of 1984. In this paper the UGC advocated greater selectivity in research funding. What is uncertain is the precise degree of agreement between the UGC and the Government as to this new policy, but some degree of consensus is indicated by Sir Peter Swinnerton-Dyer, the Chief Executive (CE) of the UGC at the time. He stated that 'the pressure [from the Government to introduce greater selectivity in research funding] is too strong to resist, *even if we had wished to*' (my italics) (quote in the THES, 14th Sept, 1984). So although this indicates compliance, it does not mean that the UGC and Government were agreed as to how the new policy was to be introduced or the proportion of university funds that were to be disbursed through this new mechanism.

The RAE may be seen as the principal part of a fundamental change to the way in which universities were to be funded by the funding councils. From 1986 onwards there was far greater transparency in the way in which universities were to be

funded and concurrently there was also a greater separation of the funding of research and teaching. A number of reasons for this change were given by the funding council and the Government. They can be summarised in the words of the 1987 White Paper:

... the allocation of research grants was based on the Government's identification of need to increase efficiency and effectiveness in and between the higher education institutions, considering rationalisation of resources in order to achieve optimum distribution between the sectors

(White Paper, 1.11 and 9.11v).

It is of note that the requirement for greater efficiency coincided with a considerable reduction in funding, in real terms. The Government's intention was to concentrate research in a few centres of excellence and separate the funding of research from the funding of teaching for the first time. The previous resource allocation method, the 'dual funding' model, was considered to spread resources too widely. In reality it may well have been part of a strategy to protect research centres of excellence from the results of the policy of reduction in public expenditure. The strategy of selective research funding also seems to be an attempt to save the best centres from the consequences of large cuts in grants to the higher education system. It may also have been the first stage in developing a hierarchical university system of the type proposed by the Advisory Board to the Research Councils (ABRC 1987). In the first selectivity exercise of 1985/86 15% of research funding was based on the results of the research assessment exercise. In 1989 this increased to 30% and in 1992 to 100% (Miller, 1995). The financial constraints imposed on universities, together with selective funding, were claimed to have affected the universities seriously, for example by the Association of University Teachers (AUT). The AUT (1989) pointed out some consequences of the constraints on university resources. It argued that they resulted in disincentives to attracting good graduates towards an academic career, because the grants offered to postgraduates were smaller than the salaries offered to graduates in the labour market. The Government reduction in

grants also affected the contracts of researchers and the pay of lecturers. A career in academia was less attractive than elsewhere because of university staff's lower pay, and worse conditions, security and prospects in comparison with alternative jobs in the graduate labour market. (Report from Association of University Teachers, 1989.)

This negative view of the UGC reforms to university funding were not echoed in the 1987 White Paper.

‘The UGC - and any successor body (see paragraphs 4.38ff) - has a key role in promoting the efficiency of universities, both through its own programmes and actions and through the guidance it gives to institutions. It has carried out a root and branch review of the way in which it decides how much grant to allocate to each university for teaching and research. It has embarked on an ambitious programme of review and rationalisation of university departments in a wide range of subjects, in some cases in collaboration with the planning bodies for the other sectors of higher education’.

(White Paper, 1987 p23)

The White Paper also refers in admiring terms to another innovation at the same time:

‘The CVCP and the UGC have also adopted proposals, put forward by a joint working party on the use of performance indicators, for the regular publication from 1987 of a range of efficiency and effectiveness measures covering all universities. Initially, efficiency indicators will include student:staff ratios (SSRs) and a range of unit costs broken down by the main categories of expenditure. Effectiveness indicators will include income from research grants and contracts, the numbers of research and sponsored students, submission rates for research degrees, the first occupation of graduates and the institution's contribution to postgraduate and professional training’.

(White Paper, 1987 p23).

In addition to these changes there was the Jarratt Report on University efficiency and, earlier, the Merrison Report advocating among other things greater selectivity in research support within universities. (These reports are briefly described in Appendix 1).

Clearly important changes to universities were taking place in the mid-eighties, following the draconian cuts imposed by the Government in 1981. Both the UGC and the Government appear to consider the changes in funding method to be central to altering the behaviour of universities and the structure of the university system. As the THES reports, 'The intention [of the funding changes] is for the UGC to move from 'informal prejudice' to a more formula- based system of allocating its recurrent grant' (THES 11 Oct., 1985). As the Green Paper makes clear, the Government was prepared to see the shape of the university system transformed since it speculated that the change in funding method may mean 'the loss of research funding for departments or even entire universities' (Green Paper 1985 , p6).

The 'new' funding formula with its transparent and explicit research assessment characteristics has been in operation long enough for it to be possible to investigate its effect on universities. That is the research question that this thesis addresses: How has the change in funding method introduced in 1985 affected university behaviour? Specifically, the thesis addresses the question by examining in two universities the effect of the funding changes on teaching and research - the two principal functions of universities and certainly those that the UGC and Government wanted to affect. This study is an exploratory attempt to open up this under-researched area in higher education.

The thesis is divided into three parts: the first part is concerned with setting the context for the research, the research question and the research design; the second part describes the data collected and presents the analysis of the data; and the final part summarises the findings and presents conclusions. The first two chapters of Part One of this thesis are concerned with the way in which economists and other social scientists have conceptualised and, in some cases, empirically examined educational institutions. One of the purposes of the funding changes is to increase 'value for money'. Economists have developed techniques that are intended to shed

light on this issue and they have also developed models that purport to describe the way in which universities and individuals will respond to different funding mechanisms and different incentive systems. The way in which economists have approached these questions is the subject of chapter one and two. In Chapter 1 the use of education production functions (EPFs) is critically examined as a method of investigating changes to the input and output relationships in education. This technique is found to be fundamentally flawed and therefore not one appropriate to the research question. However, although we reject EPFs this does not mean that the results may not indicate something about whether institutions may be becoming more or less 'efficient' in the production of teaching and research. We therefore introduce at the end of this chapter different notions of 'efficiency' so that we can indicate whether the results suggest that 'efficiency' may have increased as a result of the funding changes.

Chapter 2 introduces four models that have been used to 'understand' institutional and individual behaviour. These models are the utility maximising model, the human capital model, the Clark/Williams organisational model and the Garvin model of the university market. Each model is described and critically examined to discover if it has useful insights to offer into how the universities in this study might behave. Our conclusion is that none is entirely satisfactory and none provides any clear predictions as to how universities would behave in response to the funding changes we are examining. Nonetheless the results may indicate something about the value of the models in understanding behaviour and the reasons why there may be differences in the way in which institutions respond and position themselves in the university 'market'.

In the next two chapters we describe the changes to funding that have taken place and examine the performance indicator, the RAE, that has been used by the university funding councils since 1985. Chapter 3 describes the funding changes

and the context in which they were introduced. Thus it considers the previous funding method and the other influences on universities at that time, the mid-eighties, such as the Merrison Report and the Jarratt Report. The changes to the sources of finance to universities during that period are also presented. The chapter describes in detail the major innovation in the funding change, the introduction of a research assessment exercise. The use of the RAE as the principal basis for judging the performance of universities requires a more general discussion of performance indicators (PIs) as a means of assessing universities and this also is provided. There have been a number of critiques of the RAE that focus on its effect on particular disciplines and in Chapter 4 four of these are critically examined.

The last chapter in Part I of the thesis presents and justifies the research method used. As a result of the paucity of research in this area we were faced with a choice of either a general broad brush survey of a number of selected universities or a sharper, more detailed study of the case study type. In a sense this is not a choice because the case study is a necessary preliminary to a large scale survey. Our case study is limited because of the constraints of resources, particularly of time, to two contrasting universities. From these case studies quantitative data was collected, principally through questionnaires to a sample of one in three staff, and qualitative data was collected through interviews of selected senior staff to provide us with an understanding of the responses to the questionnaires and to give insights into policy formation at the universities.

In Part Two of the thesis we present and discuss our findings. Chapter 6 and 7 present the details of the sample, and our main findings from the questionnaires. These include a detailed analysis of the relevance of gender, year of appointment, rank and department to differences both within and between the universities. Chapter 8 presents the qualitative data collected in the interviews and relates these findings to the quantitative data presented in the earlier chapters.

In Part Three the first chapter, chapter 9, summarises and evaluates our main findings. The final chapter, chapter 10, presents our conclusions with respect to the value of the economic models, as discussed in chapter 2, together with the implications of our findings for policy makers. The chapter ends by suggesting future research which might be undertaken into this issue.

Part I: Introduction

This part of the thesis begins in Chapter 1 with a discussion of the technique most commonly used by economists to evaluate performance in education: the education production function. The technique as an instrument for evaluation of institutions is found to be fundamentally flawed on both conceptual and empirical grounds and we therefore argue that it is inappropriate to this research. However, the data that we generate on the effect of the funding changes on university teaching and research may enable us to make some tentative conclusions as to changes in efficiency, at least with respect to teaching and research. Thus the chapter ends by introducing efficiency concepts resting on somewhat less restrictive assumptions than those needed in education production function work. These will relate to our finding in the concluding section. The second chapter introduces and critically examines four models that have been used to 'explain' university and individual behaviour. The inadequacy of these models provides a justification for adopting the method that we use in this research. Nevertheless, our empirical evidence will enable us to comment further on the usefulness of the models in the concluding section. Chapter 3 introduces the changes that have taken place to university funding in the eighties and early nineties and examines the RAEs that have been used to judge the performance of universities. The chapter ends with a critical discussion of university PIs. Chapter 4 presents four discipline based critiques of the RAEs. When we present our findings we will comment on the extent to which they support these critiques. Part 1 ends with a chapter explaining and justifying the research method that we employ.

Chapter 1: Economists' Treatment of Education Production and Efficiency

Introduction

The economics of education as a significant branch of economic theory is of recent origin. Mark Blaug in his seminal work, the *Economics of Education* (1970), asserts that although earlier economists such as Adam Smith, Alfred Marshall and John Stuart Mill had considered education as a form of national investment, it was not until Schultz's address to the American Economics Association in 1961 "Investment in Human Capital" that the subject was seriously developed as a branch of economics. Of even more recent origin has been the development of theories about education production and educational finance. To put into perspective the empirical work described in this thesis this chapter will provide a critical overview of the way in which economists have attempted to theorise and empirically study education production and efficiency.

In this chapter we will consider in turn education production functions and education efficiency. The concern of economists with these subjects is readily understandable: all these developments are attempts to develop some measure of efficiency in education so that the best, most efficient, allocation of society's scarce educational resources can be made. As Hanushek (1987, p33) asserts "The concept of a production function is a powerful pedagogical tool and, in its basic form, appears applicable to a wide range of industries - from education to petrochemicals". Unfortunately, although the motives for economists undertaking this work are very worthy, to date, the record of economists working in this area has been, at best, somewhat patchy. Most of the work on education production functions has been concerned with schools, but the critique of their use applies as

well to other areas of education, including universities.

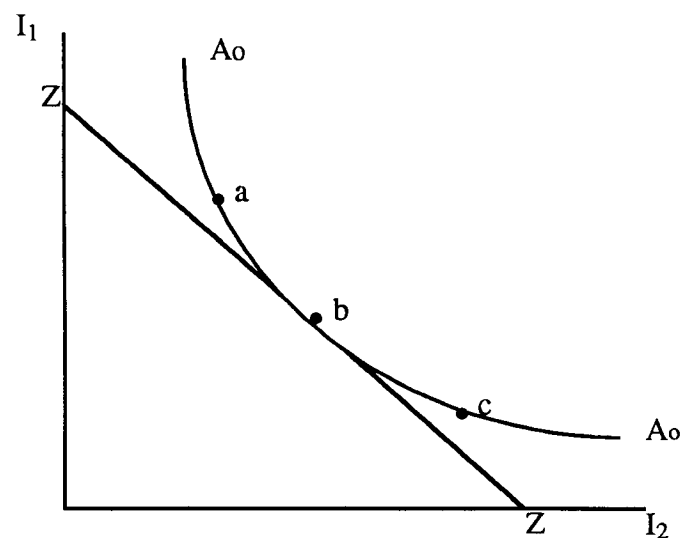
Education Production

Because this thesis is concerned with institutions and how they have responded to changes in funding we will confine our review of economists' work on education production at the micro or institutional, level.

Education Production Functions (EPF)

EPF and its use has developed from production functions used by economists to analyse firms. A production function describes the maximum output that can be obtained from a given set of inputs, given the state of technology. Typically, when applied to education the EPF relates measures of inputs into the educational process to educational outputs. An education production can be depicted in the following way. Assume that there are only two inputs I_1 and I_2 and that the way in which schools use these two inputs to produce an education output (some achievement test result perhaps) is shown in Figure 1a below. Only at point b is production efficient: isoquant A_0A_0 is tangential to the input of isocurve ZZ .

Figure 1a



The problem arises when the idea of the EPF is operationalised. The production function is unknown and must be estimated using imperfect data, usually using multiple regression analysis. An example is given below:

$$(1) \quad A_i^t = f(B_i^t, P_i^t, S_i^t, l_i)$$

where for the i th student:

A_i^t = achievement at time t

B_i^t = vector of family background influences cumulative to time t

P_i^t = vector of influences of peers cumulative to time t

S_i^t = vector of school inputs cumulative to time t

l_i = vector of innate ability

There have been numerous examples of estimating education production function of which probably the best known is the Coleman Report of 1966. A number of problems arise, however, if the results of estimates of this type are used for policy making and these we consider below.

Problems in the Application of Production Functions to Education

The basic problem facing an economist attempting to apply a production function to education is deciding what inputs and outputs he wishes to measure and how he is to measure them.

Education outputs: Standardised tests, such as the Stanford Achievement Test, are often used as the measure of output. Levin (1976, p184) accuses studies which make use of such single measures of output as being nothing more than 'black box' hypotheses, because they take no account of theories of development and learning. This line of reasoning leads to demands for a multi-disciplinary approach to developing a behavioural theory of schools. In taking this view Levin is rather

uncritical in his acceptance of the Bowles and Gintis (1976) argument that the principal function of schools is to reproduce the social relations of production. He uses this argument to justify the thought that "educational achievement is only one of many outputs of schooling, and is not necessarily the most important one" (Levin 1976, p163). Hanushek, though more critical of the Bowles and Gintis data, also recognises that: "cognitive skills, the chief measure of educational quality, may not be the only, let alone the most important, outcome of schooling in determining individuals' future success" (Hanushek 1979, p357). In later work Hanushek appears to take an even stronger line on tests and their meaning.

"Many educational decisions are "micro" ones made by the actors themselves - mainly teachers. These are both difficult to observe and measure and, quite possibly, not easily reproduced. As a shorthand description, these factors will be referred to simply as "skill" differences. Once the possibility of skill differences is introduced, the language - if not the conceptual framework - of production functions begins to fail. It is even difficult to define just what "maximum possible output" might mean since it is difficult to specify what the "homogenous" inputs are".

(Hanushek 1987)

Schools produce multiple outputs. It is no easy task to translate standard production theory which considers varying quantities of a homogenous output into an educational equivalent. Hanushek (1979, p356) distinguishes between the effects of schooling on socialization - political awareness, citizenship, moral values, etc. The fact is that schools and other institutions such as universities are producing other outputs besides cognitive achievement. This greatly reduces the value of educational production function studies which consider educational achievement as the only output: "the obvious problems are either ignored or the assumption is made that all other outputs are produced as perfect joint products in exact proportion to achievement scores" (Levin 1976, p163). This criticism of educational production function literature reinforces Levin's argument for the development of a behavioural theory of schools. Hanushek, on the other hand, is much more prepared to persevere with educational production functions if, through the

collection of more data, the variables being measured can be made more specific, and if the degree of jointness of the outputs can be measured. For example, he argues that the potential problems of multiple outputs are likely to be smaller in the early years of schooling than in the later ones.

Education inputs: The measurement of earnings differences is often used as a means of measuring educational outcomes, but earnings differences are the consequence of many inputs in addition to schooling. For example, in 1976 Bowles and Gintis argues that earnings differences are chiefly the consequence of the existing social structure, and schools adjust to instead of determining subsequent outcomes. Jencks, in 1972, argued that luck and personal characteristics (inputs) unrelated to schooling were the most important determinants of earning difference. It is not the function of this chapter to become involved in a discussion of the impact of education upon earnings. Suffice to say that, whilst the conclusions of Bowles, Gintis, and Jencks may be challenged, all economists would accept the point that educational outputs, however they are measured, are significantly affected by non-school inputs such as socio-economic and family influences, peer group influences and innate ability.

It is generally agreed that, of these variables, innate ability is the hardest to measure. Presumably the term relates to the inbuilt learning capacity of the individual student, but precisely what this means and how it should be measured remains uncertain. A failure to include a value for innate ability in the model is likely to bias upwards the estimated impact of family background on achievement. In 1972 Jencks went so far as to argue: "the characteristics of a school's output depend largely on a single input, namely the characteristics of the entering children. Everything else, the school budget, its policies, the characteristics of teachers - is either secondary or completely irrelevant". (Quoted by Psacharopoulos and Woodhall, 1985. They also give evidence which challenges Jencks, p217).

Even the measurement of school inputs, as opposed to non-school inputs, has its difficulties. The age of a school building, teacher age, experience and qualifications, the number of textbooks available, etc. may be measure relatively simply, but "there are aspects of the process which are difficult to disentangle from the characteristics of individual teachers" (Hanushek 1979, p367). Many decisions about what happens in education are made at what Hanushek refers to as the `micro' level that is to say by individual teachers in the classrooms rather than by school managers. To quote from Hanushek (1987, p38):

"Perhaps the most important concern with standardised tests is the lack of external validation. These tests do discriminate among individuals; that is, they can divide the population into different groups. However, questions are generally selected by criteria internal to tests: (a) their ability to divide students (so that questions that can be answered by all or none of the relevant population are not useful), and (b) their consistency with other questions (i.e. whether individuals getting a given question right tend to get other questions on the test rights). Further, a given test should produce the same score if taken at different times by the same individual, and slightly different wordings of questions covering the same concept should yield the same results. None of these relates directly to whether or not tests cover material, knowledge, or skills valued by society."

As mentioned earlier, Hanushek's answer to these problems is to call for greater `input specification': "There is little conceptual clarity, and the choice of inputs seems sometimes explicitly, to be guided more by the data available rather than any notions of conceptual clarity" (1976, p363). He argues, for example, that there is nothing to stop a model including the non-purchased as well as the purchased characteristics of teachers (1976, p193). In other words, despite the problems referred to above, applying conceptual models such as equations (i) to educational realities remains a feasible and valuable activity.

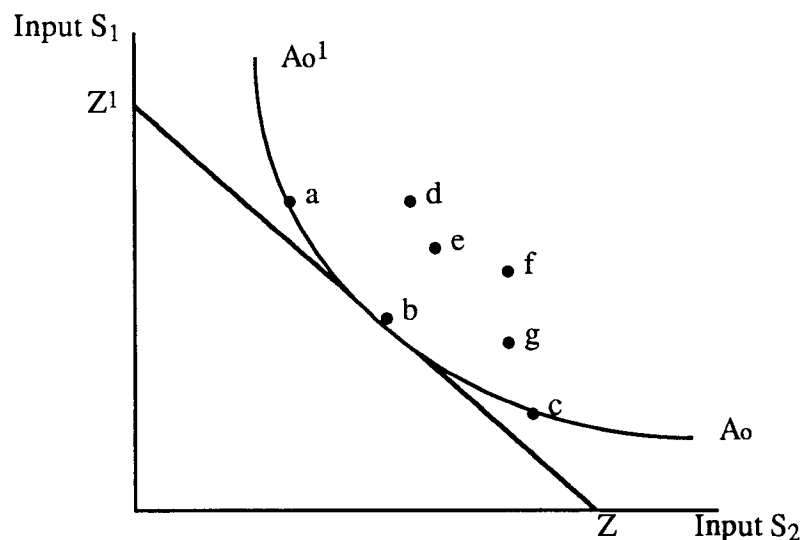
However, Levin's argument against the use of educational production functions as policy making guides is chiefly concerned with a different point. He argues that the fundamental assumption of technical efficiency implicit in the use of production

functions (see later discussion) cannot be applied to educational institutions because they are not technically efficient. Put another way this means that, strictly speaking, education production functions are not production functions in the proper sense. The next three sections of this chapter will be concerned with this argument and its implications.

Technical, Allocative and Social Welfare Efficiency in Educational Production

In addition to the problems of specification and measurement of inputs and outputs there are other fundamental conceptual problems in education production functions work. Levin provides an excellent exposition of these problems (Levin 1976). The starting point of Levin's argument is that all studies of educational production functions assume that schools are technically efficient, that they are maximising their output given the input mix which they have selected. The implications of this are shown in Figure 1b.

Figure 1b: Production Frontier for Schools (Universities)



The production frontier is depicted by the line $A_oA_o^1$ (a production isoquant). The

individual observations show schools using various combinations of the inputs S_1 and S_2 to produce constant educational output A_0 . Schools a, b, and c are on the frontier and are therefore technically efficient. All other schools d, e, f, etc., are to the north east of the frontier and must require higher levels of factor inputs to make the output A_0 . They are technically inefficient. (Why such inefficiencies might arise is explained later.) Levin's point is that if there are a large number of technically inefficient schools then statistical estimates of the educational production function will not be on the frontier - though the literature shows that it is assumed they are on the frontier. Figure one also shows the line Z^1Z , the iso-cost (relative price) line facing all schools for the two factors. School b is allocatively efficient because it is on the iso-cost line, but schools a and c are above the line. They are allocatively inefficient because they require a higher budget to achieve output A_0 than is the case at point b. The underlying goal of production function studies is to determine where point b is (Levin 1976, p154).

In Figure 1b schools a, b and c are all technically efficient, but only one, school b, is also allocatively efficient. In other words it is possible to achieve technical efficiency without achieving allocative efficiency. We are using Levin's efficiency definition. Later we refer to allocative efficiency as price efficiency. It is also important to Levin's argument that it is possible to achieve technical and/or allocative efficiency without achieving social welfare efficiency. This is shown in Figure 2.

Figure 2: Social Welfare and Choice of Output Combinations

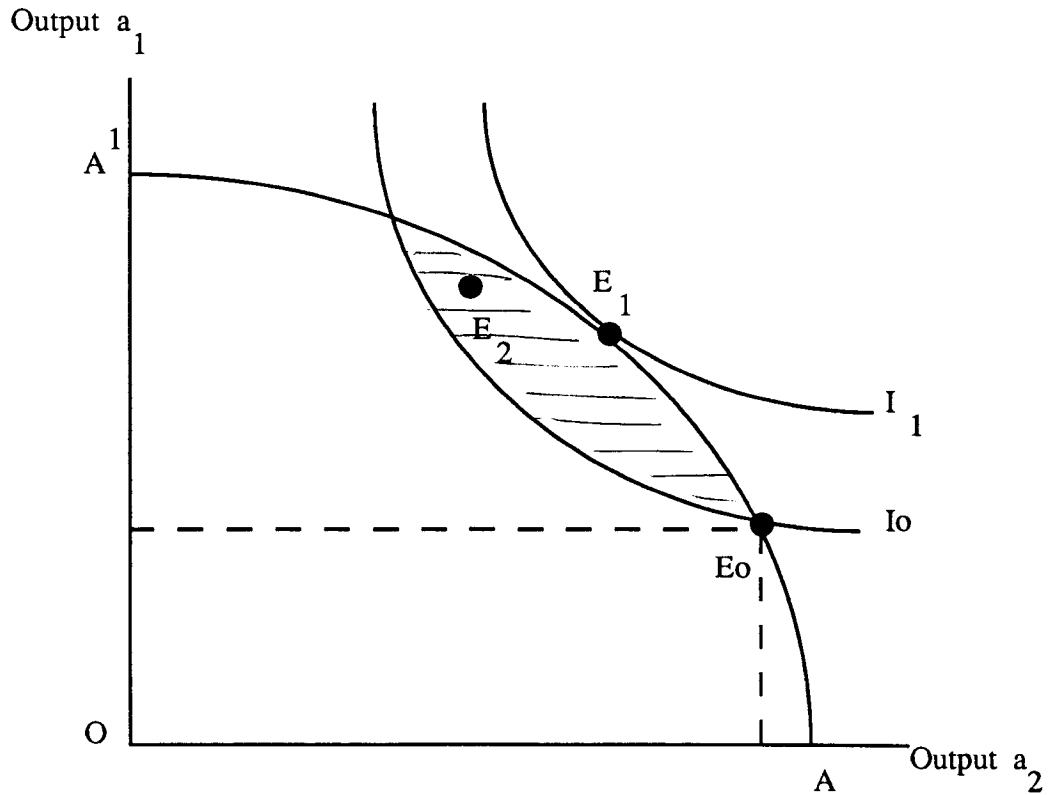


Figure 2 assumes that there are two outputs. AA^1 represents a product transformation schedule between educational outputs a_1 and a_2 . I_1 and I_0 represent social indifference curves for the two outputs such that I_1 represents a higher level of satisfaction than I_0 . Given the production possibilities and community preferences, the highest level of welfare is E_1 . Assume, however, that the output produced is E_0 , which is being produced efficiently because it is on the frontier. However, the combination E_0 gives the community less satisfaction than E_1 , and in fact less than any combination in the shaded area (e.g. E_2). In other words: "it may be better to produce inefficiently that which is highly desirable to the community than to produce with perfect efficiency that which is of low value" (Levin 1976, p155).

So far there is little in Levin's argument with which exception can be taken.

Figures 1 and 2 give a useful diagrammatic representation of efficiency issues relating to educational production functions, and figure 2 raises the important issue of maximising social welfare. However, figure 1 does suggest that schools may be technically inefficient. Below, we consider Levin's arguments as to why this might happen.

Are Education Institutions Technically Efficient?

Levin (1976, p157) lists six conditions which economic theory uses to explain technical efficiency in firms operating in competitive, private industry:

1. managerial knowledge of the technical production process;
2. substantial managerial discretion over input mix;
3. a basic competitive environment;
4. managerial knowledge of prices for both inputs and outputs;
5. an aim (e.g. profit maximization) which is consistent with maximising output;
6. clear signals of success or failure (profit, loss, etc.).

Having stated these as the conditions for technical efficiency in private, competitive industry, Levin then argues that none of the conditions apply to education. His argument, which is developed in some detail, may be summarised thus:

1. Educational managers lack knowledge of the production set for particular outcomes;
2. Substantial management discretion does not exist over which inputs are obtained and how they are organised in educational production;
3. Little or no competition exists between schools;

4. Prices of inputs and outputs are not readily available to educational managers;
5. Incentive/reward structures of schools seem to have little relation to the declared educational goals of those educational institutions;
6. There are no clear signs of success/failure for schools comparable to firms operating in the competitive market.

All of this leads Levin to the conclusion that, since schools do not act like competitive suppliers, it is a serious mistake to assume they are technically efficient. The mistake is multiplied by the fact that studies generally assume that schools are maximising a single output. They can not be operating at the frontier for one output because they produce multiple outputs: "it is reasonable to believe that the production of other outputs reduces the amount of cognitive learning that will be produced" (Levin 1976, 163). Thus there are many reasons for believing that there are substantial technical inefficiencies in schools.

Levin's argument concerning technical inefficiency can be considered in two ways. The first, obviously, is to ask if it is correct. The second, which will be considered later in this chapter, is to ask whether it matters. With regard to the first of these two points, Levin has been attacked for being superficial and 'simpleminded' (Watts 1976, p197). It is certainly true that many firms in private, competitive industry would not fulfil the six conditions leading to technical efficiency. Nevertheless, it does seem reasonable to suppose that firms responding to market signals in a competitive situation are more likely to have incentives for achieving efficiency and maximising output than are institutions in the educational sector.

Hanushek (1979, p370; 1976, p194) does not accept that Levin's arguments demonstrate there must be technical inefficiency. For example, the fact that an educational manager is not motivated by profit maximisation does not in itself prove

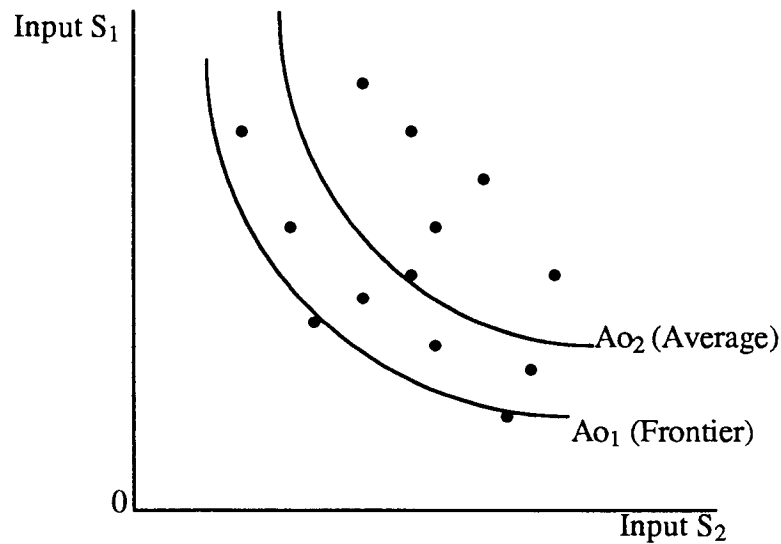
that he will fail to organise his institution so as to be on the production frontier. The fact that a headteacher is unlikely to be motivated by profit maximisation and may have little knowledge of the production set for particular outcomes does not preclude the maximisation of output. In such a situation the production frontier may be achieved, but not at lowest cost (as with firms a and c in figure 1). In other words, the problem would not be technical efficiency but allocative or economic inefficiency.

However, none of the points in the previous two paragraphs remove the possibility that technical inefficiencies may exist. Hanushek is really suggesting that allocative efficiency/inefficiency deserves more attention than does concern about technical inefficiency, which brings us to the second point raised above. Does Levin's apparent discovery of technical inefficiencies in education really matter? He would argue that it does because of its implications for the use of education production functions as policy guides. The next sections are concerned with these issues.

The Implications of Technical Inefficiencies in Education

First of all, it is necessary to repeat the basic point to Levin's argument: attempts to estimate educational production functions use achievement as the single measure of output and are based on the tacit assumption that educational institutions are producing as much achievement as can be obtained with their resources; i.e. they are producing at the frontier. "But given the high probability of technical inefficiency, estimates of the production function on this output are likely to lead to biased co-efficients and misleading implications" (Levin 1976, p164). This situation is shown in Figure 3.

Figure 3: Frontier and Average Production Isoquants for Student Achievement

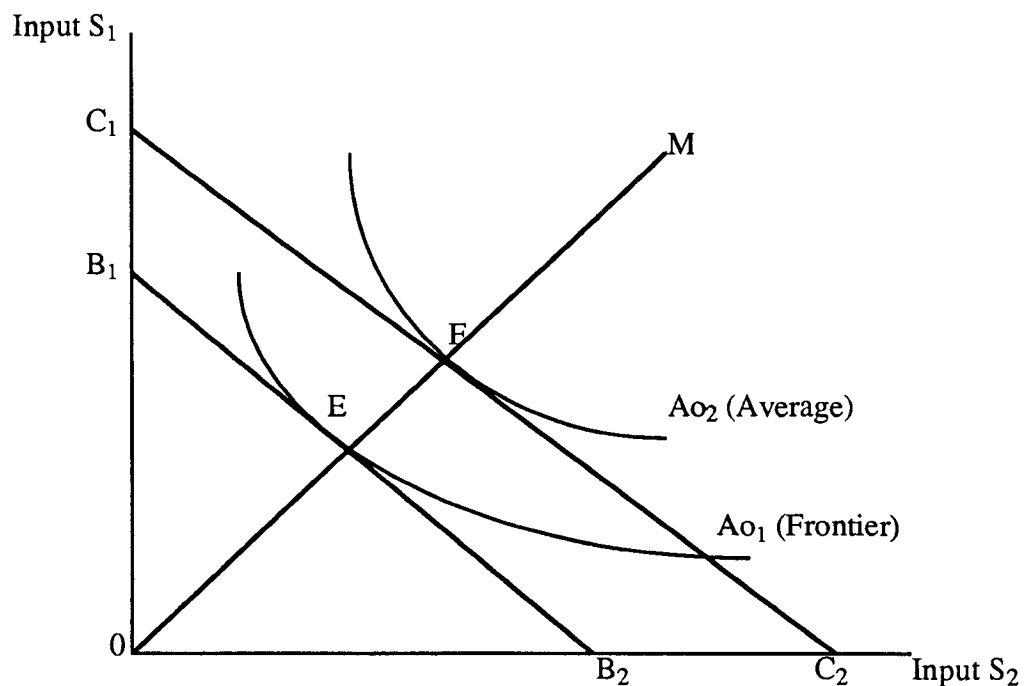


In Figure 3 S_1 and S_2 represent two different school inputs in the production of student achievement. Each observation represents that combination of the two inputs which a particular school is using to produce a given amount of output, A_o . The isoquant Ao_1 is a mapping of the most efficient points for producing the output A_o . In other words, it is the production frontier. All points to the north east of Ao_1 are using higher input levels to produce the same level of achievement and are therefore technically inefficient. The isoquant Ao_2 represents the average for all the observations - including efficient and inefficient schools. Clearly all points on Ao_2 are to the north east of Ao_1 , showing that the average production relationship is a less efficient one than the frontier relationship.

On the face of it this is not much of an argument: some schools are more efficient than others, therefore the average production relationship is bound to be less efficient than the most efficient possible. However, Levin's point is that educational production function estimates have used data based upon the performance of all schools in a particular survey and not just the most efficient

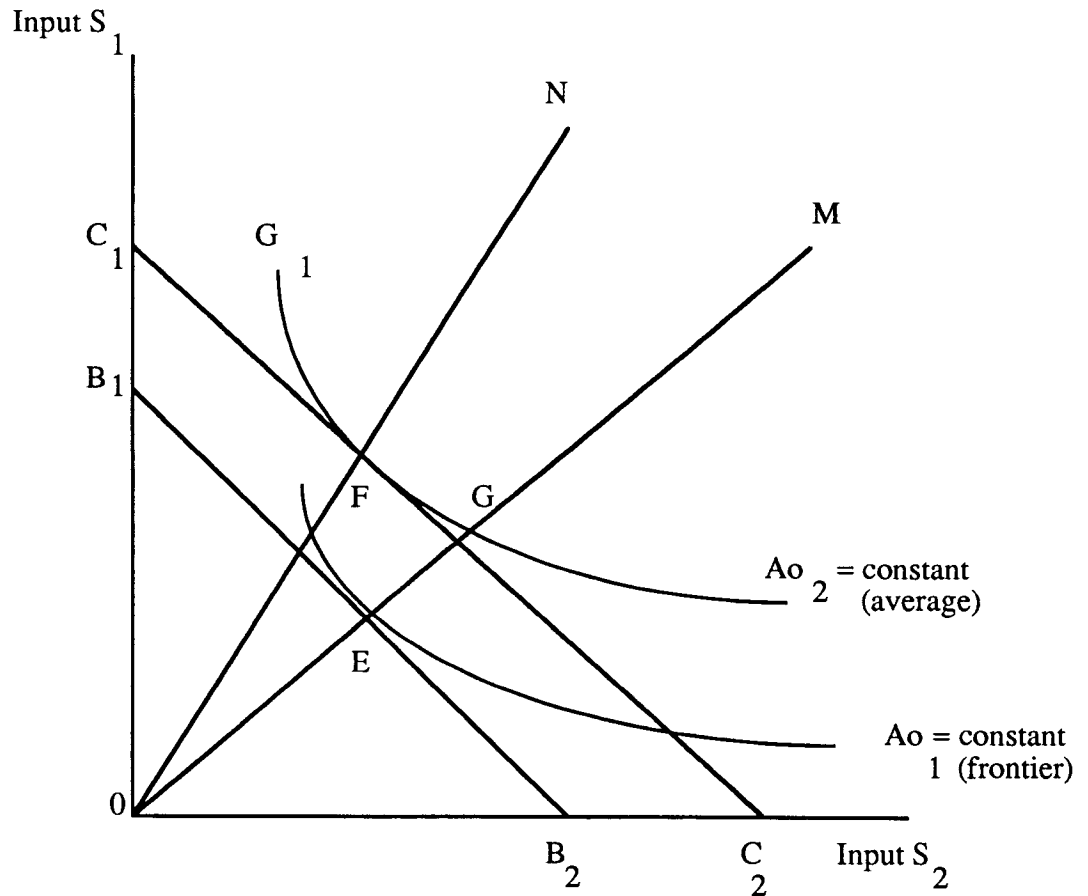
ones. In other words the studies have related to Ao_2 (the average) rather than to Ao_1 (the frontier). Therefore: "the existing statistical studies of educational production functions are not production functions in the frontier sense. Moreover their results might suggest erroneous conclusions about which combinations of inputs (programmes) maximises achievement for a given budget restraint" (Levin 1976, p164). In fact policy recommendations based upon such misleading production functions can lead to a loss of allocative efficiency. How this might arise is best considered by contrasting the situations in figures 4 and 5. As will be clear from figure 3, Levin's discussion contrasts those schools operating at the frontier with the average for all schools. Whether or not a school is at the frontier or is just represented by the average it will achieve allocative efficiency if it selects that combination of inputs which equates the ratios of marginal products to prices. Figure 4 shows a situation where the ratio of marginal products to prices is the same for both frontier and average schools. In such a situation the existence of technical inefficiencies does not matter in the sense that it is neutral between inputs:

Figure 4: Technical Inefficiency that is Neutral Between Inputs



In figure 4 Ao_1 is the production isoquant for Ao for all efficient schools and Ao_2 is the isoquant for the entire set of schools. B_1B_2 and C_1C_2 are isocost or budget lines reflecting the various combinations of the inputs S_1 and S_2 available within two given cost restraints. Point E shows that combination of the two inputs which produces output Ao given budget restraint B_1B_2 and applies to the efficient or frontier schools. Point F shows that combination of the two inputs which will produce output Ao given restraint C_1C_2 and applies to the average. The line OM is a ray drawn from the origin which intersects both points E and F. This being so the same ratio of S_1/S_2 is optimal (i.e. produces allocative efficiency) for both sets of schools. Consequently, it does not matter which group of schools is used to estimate the production function because the input ratio is the same in both cases. However, there is no particular reason why this particular situation should exist. Assuming that technical inefficiencies exist, it is likely that they will not be neutral between inputs. In other words, the inefficient school may be organised such that the relative inefficiency in the use of one output will be greater than for another. This is shown in figure 5.

Figure 5: Technical Inefficiency that is Biased Between Inputs



In Figure 5 a ray drawn from the origin representing a constant ratio of inputs does not pass through both points of tangency (E and F) as it did in figure 4. The optimal ratio for frontier schools remains at point E, but the ray OM does not intersect with the isoquant Ao_2 at point F. Instead it intersects at point G which is a more costly combination than that represented by point F because it is outside the isocost line C_1C_2 . This means that the optimal ratio of S_1/S_2 will be different between the two groups of schools. Therefore if we seek to impose upon the non-frontier schools the input ratio represented by the ray OM we shall be recommending that they choose an allocatively inefficient set of inputs. This is the crucial point of Levin's argument:

The point to be emphasised is that even with estimates based upon perfectly specified systems of equations for educational achievement, "the input combination

that might be considered optimal for the industry will actually lead to a reduction in allocative efficiency for some educational firms" (Levin 1976, p168). Levin's conclusion may be summarised thus: if we implement policies based upon estimates of the production function for the industry as a whole we will actually contribute to increasing the inefficiencies of the industry. He acknowledges that this is difficult to test in practice, though the difficulties reinforce the argument that estimates of educational production functions will be unreliable: namely that the outputs are difficult to identify or measure, and the inputs are not properly specified. Despite these problems, Hanushek and Levin are both able to find many examples of estimated educational production functions being applied to policy making decisions. It seems reasonable to suppose, even after allowing for the doubts mentioned earlier, that estimated production functions for competitive industrial firms have fewer errors than estimates of educational production functions. Yet, as Hanushek says, "Few people would expect manufacturing firms to change their behaviour given estimated production functions for industries, and there is very little temptation to prescribe any public policies based upon the results. The same cannot be said for education" (Hanushek 1979, p354). For example, in 1971 the US Senate Hearing on Equal Educational Opportunities made use of results, as did the 1972 Presidents Commission on 'Schools, People and Money'. Levin notes that the "penchant for standardising input proportions is reflected in the laws of many states that require very specific ratios of administrators to teachers and of teachers and other professional staff to students. It is reflected in the policy prescriptions of most educational reports" (Levin 1976, p173).

The problems discussed above indicate that education production functions as presently used are unlikely to provide useful signals about the efficiency of educational institutions or of changes to their efficiency. Indeed, it may be added that because they do not take into account costs or the objectives of the policy makers, whether within the institution or at a national level, even if they were a

valid tool their value in decision making would be extremely limited. Despite these rather negative conclusions about economics and its value in the analysis of education it is possible to see that there may be some value in developing a somewhat less restrictive model of efficiency that may provide some indication to policy makers of the effects of their policy on efficiency. To that end consider the following.

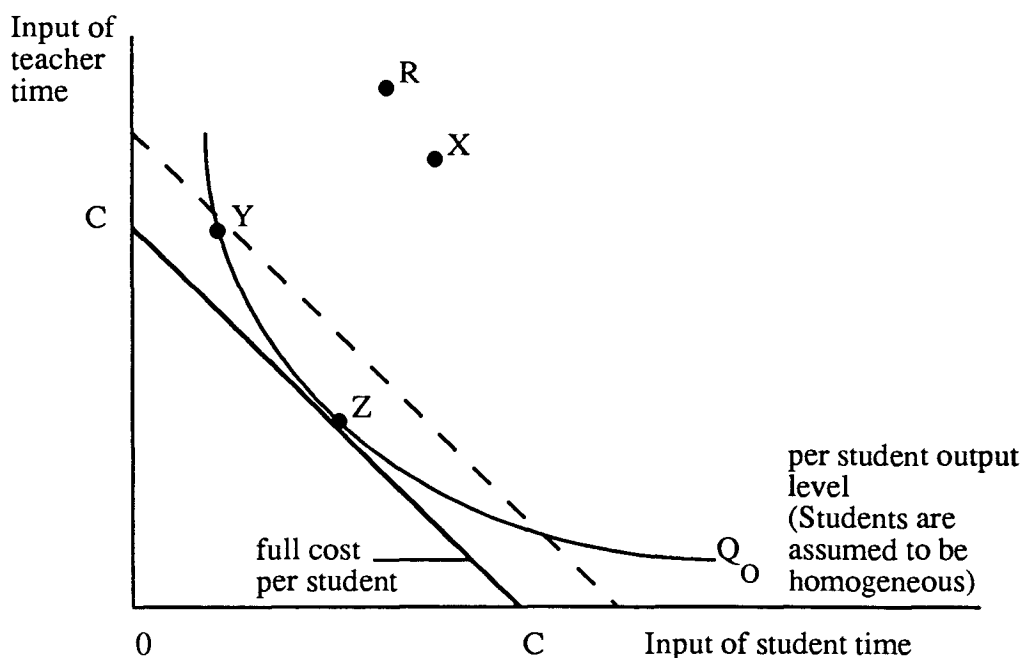
Efficiency and Higher Education

From the early eighties all Government statements concerning higher education emphasised the need for universities to become more efficient and accountable. As Williams puts it (in the eighties) 'government higher education policy was dominated by two main concerns: to help reduce public expenditure; and to increase efficiency and to be explicitly accountable for it' (Williams 1992 p4). The development of Performance Indicators (PIs) was one response of the funding councils' to the need to make universities more accountable. Another response and related to the development of PIs was the development of explicit funding formulae which make clear to universities the basis on which they are being funded. Although this research is not concerned with 'testing' the hypothesis that universities have become more efficient as a consequence of the development of a new method of funding it is of interest to speculate as to whether the new funding changes have altered the behaviour of institutions in ways that appear to have increased their efficiency. In order to do this it is useful to begin with a definition of efficiency. In so doing we will necessarily raise a number of issues explored in our discussion of production functions; the most important concerns the definition and measurement of the inputs and outputs of education and how these inputs (however defined) interact (the processes of education) to produce the outputs of education. Since we have explored these issues earlier we will not do so here.

When economists examine efficiency in education they concern themselves with two types of efficiency: production efficiency and exchange efficiency. (We are not concerned with Pareto efficiency, another efficiency concept, because it is concerned with internal and external efficiency (for a fuller discussion see Verry, D. 1987)). Production efficiency has itself been subdivided into two types, both borrowed directly from the theory of the firm as described in traditional economics textbooks. The two aspects of production efficiency are technical efficiency and price efficiency. Note our comment on page 26 about price efficiency. (Two books that attempt to show how these concepts of efficiency can be related to education are Monk (1990) and McMahon and Geske (1982) and we will base our definitions on those that they elaborate). Technical efficiency is achieved when inputs in educational processes are combined in such a way as to maximise outputs. If we knew the shape of the education production function this would provide us with the necessary information to maximise output. (For the present we will abstract from the problems that we described earlier with respect to defining and measuring the 'inputs' and 'outputs' of education).

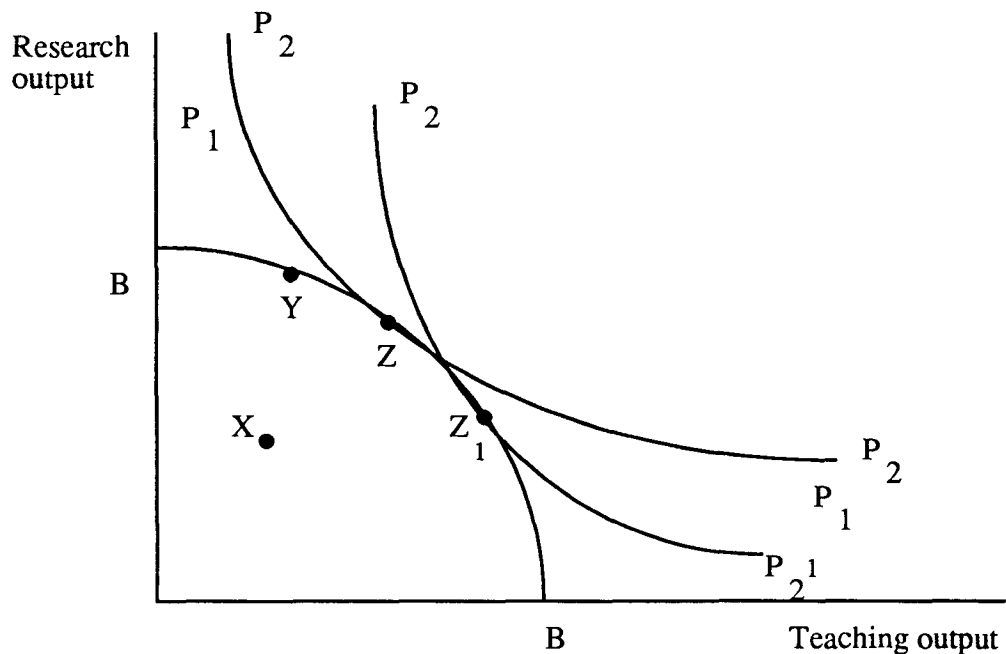
However, inputs cost money and since educational budgets are limited it is desirable to produce educational outputs at as low a price as possible. A movement to a position where the cost of producing an educational output falls is a move towards price efficiency. (In some of the literature this is referred to as economic efficiency.) An example of price and technical efficiency is provided in Figure 1.

Figure 6: Price and technical efficiency illustrated using two educational inputs



Curve Q_0 represents technically efficient ways of producing student outputs - any point on this curve is technically efficient. If the line CC in Figure 1 represents the relative cost of two inputs, teacher time and student time, a move from Y to Z represents an increase in price efficiency, for it now costs less to produce a unit of output. To summarise, where output is maximised per unit of input we have technical efficiency, curve Q_0 , and where it is maximised at least cost we have price efficiency. Where curve Q_0 is tangential to line CC we have price efficiency for student output being maximised at least cost. Other points on Q_0 , such as Y , are technically efficient but not price efficient. Points such as R and X are neither technically not price efficient.

Figure 7: Various efficiency concepts illustrated using two educational outputs



In education, we are often concerned with more than one output; for example, universities provide a teaching service and a research output. We can apply the above efficiency concepts to this situation too. In Figure 2, the technically efficient frontier for research and teaching is given by BB and a move from X to Y illustrates an increase in production efficiency. If P_2P_2 represents the objective function of the educational authority, that is, the combination of research and teaching the authority desires, a move from Y to Z represents a move towards what is called allocative efficiency. We have now moved from P_1P_1 to P_2P_2 which represents a higher level of satisfaction. When we are concerned with satisfying society's demands or, in economists' jargon, society's objective function, we have a special case of allocative efficiency called *exchange efficiency*.

Exchange efficiency refers to the efficiency with which appropriate educational outcomes are matched with the educational demands of 'society'. It is similar to allocative efficiency, except that we are now concerned with society's demands.

When we have production *and* exchange efficiency we have *economic* efficiency. Clearly, exchange efficiency implies production efficiency but the converse does not hold. Moreover, it is not at all clear what is meant by the educational demands of 'society'. Suppose that educational institutions have one preference about the mix of teaching and research, whereas the government has another. In that case, we can achieve production efficiency at two different exchange efficiencies. In short, economic efficiency now has two possible meanings. Thus, in Figure 1, production efficiency is achieved at Z and Z¹, and the exchange efficiency depends on whether we give priority to the government's objective function P₂, or the institution's preference function P₂¹. The important conclusion of this analysis is that economic efficiency in education depends just as much on whose educational objectives we are maximising as on the technical relationship in education between inputs and outputs.

Thus, in analysing the implications of any method of financing higher education, we need to ask whether it is consistent with the achievement of both production and exchange efficiency. To take a simple example: the government as the decision-maker may wish to allocate resources in education in such a way as to maximise economic growth. If we measure economic growth in the standard way as increases in per capita income, the government needs to know what level and type of education will best serve to increase per capita income. This decision having been made, perhaps with the issue of cost-benefit analysis, the next decision concerns the method of funding most likely to ensure the goal is achieved as efficiently (cheaply) as possible, i.e. production efficiency is attained. Let us assume that the government has discovered that the highest economic returns to education are from postgraduate courses in pure science (actually this is rarely the case). The government may consider that a change in the system of financing students, say by giving postgraduate grants to students studying pure science, will lead to the desired increase in the number of postgraduate pure scientists.

Alternatively, the government may consider a change to the way that institutions are financed; for example, it could decide to allocate resources to institutions on the basis of their numbers of postgraduates in pure science. The choice between these two changes to the financing of higher education should be made *after* their implications for achieving production efficiency have been considered. That is, not only should the Government introduce changes that will result in more pure science postgraduates but it must be by a method that encourages institutions to do so as cheaply as possible too, i.e. it should encourage production efficiency.

Our research findings may indicate the direction in which efficiency, particularly production efficiency, has been moving in response to the changes to university funding. However, for the reasons stated earlier in this chapter we will not be able to measure precisely these changes to efficiency. We return to this issue in our final chapter.

Chapter 2: "Economic" Models/Theories of Universities

Introduction

In the previous chapter we examined the use of the education production function and the economist's concept of efficiency. Implicit in the EPF work is the notion that educational institutions, whether schools or universities, will strive to become efficient. As we argue, this may be an unreasonable assumption because the incentive structure and mechanisms found in the private sector of economy are rarely found in the education system. In order to understand how universities behave it is necessary to develop existing theories /models or develop new ones. In this chapter we examine attempts that have been made, within what might be broadly described as an 'economic' framework, to understand university behaviour. Four models are considered, the utility-maximising model, the human capital model, what we term the Clark-Williams model and the Garvin model. For different reasons, and to different degrees each of the models is deemed inadequate or incomplete as an explanation or predictor of a university's response to funding changes. However, they do provide some useful insights and these will be commented on in the concluding chapter.

The Utility-Maximising Model

The utility-maximising theory of universities is very clearly described in Culyer (1970). It is one of the few early examples of an attempt to develop a "purely economic theory of universities with minimal reference to the contribution made by other disciplines" (pp349). Perhaps it would be fairer to describe the paper as an

attempt to develop a model of university behaviour which has some predictive power. It is clearly based on the non profit models of institutional behaviour developed by economists to replace the neo-classical models which assume institutions (firms usually) are motivated by the pursuit of pecuniary returns. There have been other attempts by economists to analyse university behaviour in terms of a 'utility maximising model', for example Becker 1975, James 1990 and Massy and Zemsky 1997, but they tend not to predict but to describe, using increasingly complex mathematical models and statistical tools. In this way they may be seen as an improvement on Culyer's model, but they suffer from the same weaknesses and do not attempt to 'explain' global phenomena as Culyer does. To illustrate this point consider the Massy model: ' We begin, though, with some simplifying assumptions about faculty attitudes and behaviours. At issue is the behaviour of individual faculty members, but for modelling purposes we focus on academic departments'. A number of simplifying assumptions are then made. The first is 'that faculty themselves integrate the motivational complexity to a 'bottom line' we call utility, and that certain characteristics of utility can be inferred from departmental behaviour'. The second 'simplifying assumption is that faculty value discretionary time - at least in part because increases in discretionary time enable increased research output. Research success produces both extrinsic and instrumental benefits for the faculty member, and faculty tend to prefer lower to higher teaching loads because teaching load correlates negatively with discretionary time. Our third simplifying assumption is that faculty are intrinsically interested in educational quality, and that at least some institutionally-based incentives encourage that view'. The results of their study are generally positive, but what this means must remain problematic: each assumption is open to challenge and major issues, such as the meaning of 'educational quality' are not addressed. Perhaps it is this type of work, if ever read by other academics interested in education, that gets the economics of education a bad name; it certainly seems to provide an argument for

the subject developing into the 'political economy of education' rather than merely the economics of education!

To return to Culyer, his model assumes that within universities there are three groups of actors, administrators, teachers and students and it seeks "to explain the behaviour of university administrators, teachers and students in terms of their motivations, the constraints which govern their behaviour, and the changes in behaviour which are predicted when the environmental constraints are altered" (p351).

The three classes of actors are assumed to maximise their utility by appropriate behaviour within the university environment. The university is perceived as "a productive enterprise producing principally two products: research output and instruction to graduate and under graduate students" (p351). The model is intended to predict the output mix of universities and how it might change in postulated changes to the environment. (The funding mechanisms, though not explored by Culyer, may be seen as an environmental factor which, if changed, will affect the university output mix. Funding method may also change, and again Culyer does not explore this, the input mix in terms of change in the behaviour of and type of students, teachers, administrators already in the system and those subsequently recruited).

The major economic hypothesis used in utility maximising theory is described by Culyer as "the classic implication that as it becomes relatively more costly for a person to acquire ownership over one of the variables in his utility function, other variables will be substituted for it. Utility theory has not, of course, succeeded in producing an unambiguous demand theorem, and we shall assume (because it yields the right answers) that the economic goods in the utility functions of both buyers and sellers are superior goods" (p352). Culyer proceeds to explore the

utility functions and the constraints on these functions for the three groups of actors in universities, administrators, teachers etc. One such constraint which he explores is the budget constraint, the size of the grants secured by institutions. However, if administrators' utilities are to be maximised they will alter their behaviour in response to changes in the method of funding as this will, among other consequences, affect the size of their budget. Hence the budget constraint may, if the funding method permits, be affected if administrators and teachers, by, for example, recruiting more students or obtaining more research grants.

Culyer explores other constraints on the actors in the system and possible conflicts that may arise between them. Administrators, for example, may be interested in the pursuit of a good academic reputation for their institution, for example, through high research rating and good degree results. To that end he/she will want to retain and recruit good teachers and researchers and to be rid of the rest. Academics' utility will be threatened by such conditions in university life and academics may seek to escape from the "arbitrary" change that may be demanded by managers - hence their desire for security of tenure or, at least 'permanent' rather than temporary contracts.

A further conflict may arise in the way that funds are allocated "*Ceteris paribus*, teachers would probably prefer a more comprehensive library stock, greater numbers of competent professional colleagues, research assistants, etc., while administrators might prefer more personal telephones, carpets, social junketings, and other entities which improve their efficiency and increase their on-the-job utility. Here is a fruitful source of conflict over the distribution of expenditure within institutions (in consultation in the UK with the Funding Council) which is ameliorated only in part by the fact that some individuals have functions both as teachers and administrators" (p355).

Whether administrators in the seventies, let alone now, would recognise this depiction of themselves may be open to question, but there may still be a conflict of interests. An academic today may gain more utility from activities related to research; reading, writing and thinking, than administrators who may be more focused on returns to the funding council, requiring teachers to fill in forms on student numbers, research income and their publications. Anybody currently in the university system will recognise this requirement on university staff and the contrast between the current position and the much more collegial and relaxed scenario of the seventies and early eighties. (This change is explored more fully in our research). This is not to imply that today is worse or better than the past, but to emphasise the difference in emphasis to different aspects of university academics' activities.

Culyer proceeds to use the model he has developed to explain what was then a recent phenomenon, student unrest. He explains the unrest in the following way: if "the present value of this actual stream (of utility to students) is lower than the present value of an alternative certainty - equivalent potential utility stream, then there exists an incentive for students to change conditions so that the potential stream becomes the actual stream" (p362). He proceeds to explain why protest takes place in term time rather than vacation time "the opportunity cost of time is higher (than in vacation time) due to the pressure of foregone earning as well as foregone vacation study" (p363). He further argues why Sociology students are more likely to engage in protest "Further implications from so simple a qualitative theoretical construct can be inferred only with the introduction of some hypothesised empirical determinants of the two behaviour determining functions. One might postulate that the relative height of the two curves will be different for different categories of student. Consider, for example, the possibility that some disciplines may make extravagant claims (or, less strongly, may be *believed* - by students - to make extravagant claims) for their usefulness in the analysis of important problems. In the sense that (say) Sociology provides a less formal and

reliable body of analysis to apply to real world problems than (say) Economics (sic) or Engineering, we have a prediction that the difference between the **potential** (expected) and actual utility streams will be larger for the former students, and hence the marginal benefit curve from protest would be higher. Conversely, **due to** the relatively low value placed upon current studies, the marginal subjective cost curve would be relatively lower for the former category of students. Hence the implication may be derived that Sociology students would be a higher proportion of the protesters than Economics or Engineering students" (p363).

In his conclusion Culyer claims that "The phenomena of university administrators, teachers and students' behaviour appears to be explained by the utility model and the right structures" (p366). He further claims that "this approach makes it possible to predict the consequences of changes in the constraints upon university decision makers" (p317). Change to the methods by which universities are funded may be deemed to be change in the nature of the "constraints" on universities - different strategies are now required to maximise utility. The utility to be maximised will be that of the university decision makers. The model, unfortunately, is not clear as to who the "university decision maker" is. Indeed, in the earlier part of the paper Culyer, in exploring the potential conflict between administrator, teacher and student utility functions highlights the need for compromise. Where this compromise is struck is presumably a consequence of the relative power of the actors in the university. How this power is allocated is clearly central to the way in which universities behave, but we are given no rules for quantifying power and thus to make predictions. Culyer's model can "explain" what has gone on; what has taken place reflects utility maximising behaviour of the actors given changes in the relative "price" of their actions. But, we are provided with no "rules" for establishing where the relative utility functions are located. Nor does Culyer tell us the conditions under which utility functions may shift. The notion of "price" suggests that quantification is possible but, again, no examples of how price is to be

measured are provided. Perhaps this is empirically impossible and, if so, renders the predictive power and testability of the model impossible. Indeed, the model has a very high level of generality in which contextual factors are not dealt with and alternative explanations are ignored.

To illustrate this last point: Culyer explains student unrest as taking place during term time rather than in vacations because of differences in the opportunity cost of time. He ignores the possibility that there may well be no foregone earnings during vacations and that access to the library and laboratories may together make opportunity costs actually higher during term times, particularly if examinations are approaching. Not only is his own explanation problematic, but alternatives are also ignored. Students may demonstrate during term time merely because they are together during term times. Or the reason for the demonstration at the particular time may be because it was then that the French protests had begun and it was these that sparked off the British protests. And, if Culyer's model was to be used to "explain" French student behaviour, he is confronted by the uncomfortable fact that their protests took place both in term and vacation time.

Similar doubts arose with respect to other claims for this model. Sociology students are more likely to protest than other groups because of their subject "less formal and reliable body of analysis... hence the marginal benefit from protest would be higher". Perhaps Sociology students are merely more politically motivated and this may also explain why they enrolled in Sociology courses in the first place.

Culyer's model appears to have inherent weaknesses. It may also suffer because the theory of demand on which it is based does not transfer very readily from the market place (for which it was developed) to the university system. We have focused on Culyer's model not because it is the best of its genre, it is not, but

because it is the most general and, because it is less technical than most of the others which are littered with complex mathematical equations, it is more readily explicated and its flaws more obvious.

The Human Capital Model

E. St John has argued, with respect to the USA, that "human capital theory has a substantial influence on the formulation of policy proposals for the financing of higher education" (St. John, E. 1994, p67). Its relevance to higher education finance stems from the fact that it is a theory that purports to explain individual behaviour (see Schultz 1961 and Becker, 1964, 1993) and it also provides the conceptual arguments and empirical justification for government spending on education. The theory does not explicitly consider mechanisms for funding universities but, as we comment later, it may have implications for the way funding is arranged.

What is Human Capital Theory?

Human capital theory views decisions to invest in education as a choice with costs and benefits, both pecuniary and nonpecuniary (Becker 1964, 1993). For individuals, the pecuniary costs include the direct costs of attending (tuition, books, living expenses, and so on) and indirect costs (foregone earnings), while the primary pecuniary benefits are gains in lifetime earnings. Nonpecuniary benefits include satisfaction with work and related social and psychological benefits. For society, the pecuniary costs include both the direct expenditures of tax pounds or dollars - the subsidies provided to institutions and, more recently, to students - and indirect costs associated with the decreased opportunity to make other investments (for example, in defence, health and so forth), while the benefits include gains in productivity and tax revenues. The nonpecuniary benefits to society are said to

include intergenerational equity and an increased sense of democracy. Quoting from authors who have been influential in the renaissance of human capital reveal slightly different emphases as to what is central to the theory.

"Much of what we call consumption constitutes investment in human capital...in so far as these expenditures increase the value productivity of human effort (labour), they will yield a positive rate of return".

(Schultz, 1961, p1).

"This study is concerned with activities that influence future monetary and psychic income by increasing resources in people. These activities are called investments in human capital" (Becker, 1993, p2).

"People spend on themselves in diverse ways, not only for the sake of present enjoyment but also for the sake of future pecuniary and non-pecuniary returns" (Blaug, 1992, p207).

"The basic premise of the human capital approach is that variations in labour income are due, in part, to differences in labour quality in terms of the amount of human capital acquired by the worker" (Cohn and Geske 1990, p34).

There are many similarities between the definitions. Firstly, each implies that individuals take into account the future consequences of their actions in terms of the returns which they receive. "Human capital", it seems, involves an investment rather than a consumption activity on the part of individuals and we would expect economic actors to form expectations regarding the outcome of their investment. Secondly, the definitions do not indicate the type of activity which could be classed as a human capital investment. Hence, the human capital concept has been applied to fields such as health care, migration, education, family planning and training. Here we focus on the human capital approach as applied to education as this area

appears to have generated the majority of academic controversy regarding both the appropriateness of the treatment of education as an investment rather than a consumption decision, and the effects (if any) of education on future returns.

However, although there are similarities in the definitions there are also differences. The author's differ regarding both the *consequences* of investment in human capital and the *mechanism* by which an investment in human capital leads to an expected return.

In the definitions of Becker and Blaug, the consequences of an investment in human capital are broader than those expected by Schultz and Cohn and Geske. In the former set of definitions, the returns from human capital need not be in terms of increased income but may also appear in terms of "psychic income" or "non-pecuniary returns". In the definitions employed by Schultz and Cohn and Geske the return is pecuniary. There is also a difference between the mechanisms which may produce an expected return. For Schultz and Cohn and Geske, an investment in human capital causes a rise in "productivity" or "labour quality" leading to a rise in income. Blaug and Becker are even less explicit regarding this mechanism. Becker refers to "resources in people" whilst Blaug refers simply to individuals "spending on themselves". From the individual's perspective the mechanism may be unimportant, as long as the human capital investment yields a return.

Although there are differences in all cases the essence of the model concerns the motive behind decisions to spend on education, whether by the individual or by the state. Individuals invest in education to improve their future lifetime pecuniary and non-pecuniary income and societies invest in education to promote economic development. There may also be other motives for spending on education, such as consumption benefits for the individual and perceived social, political and cultural benefits for society. When a government states that its policy of expansion of

higher education is in order to "catch up with our neighbours", in terms of the proportion of the population in higher education, so that the UK can become economically competitive, we are witnessing an example of human capital theory in action. The motive for spending now is to enhance economic gains later. (Whether or not the predicted economic gains are realised is not at issue, though policy makers would be advised to empirically analyse the consequences of their actions and use the results to inform future policy).

Human capital theory has been subjected to critiques, theoretical and empirical. The principal challenges have been: that it is too narrowly conceived, ignoring in particular the influence of social and political forces in society (see Bowles and Gintis 1976 for an illustration of this argument); that it misrepresents, or misunderstands, the nature of the relationship between education, earnings and productivity (The most abstract depiction of this view is presented in Arrow's 1973 paper on "screening"); that the human capital view of the operation of labour markets is naive, they are characterised by segmented and internal labour markets. Doeringer and Piore (1971) develop this institutional model. It is a model which has more recently been radicalised by Piore, Gordon et. al. (1982), Edwards (1979). It can be argued, however, that all these theoretical attacks miss their target, the human capital model, since they do not have anything to say about the core of the theory, the motives for spending on education.

The model has also been criticised because it does not "explicitly address the issue of the organisational productivity in higher education" (St John, 1994, p69). St John develops this argument by stating that human capital theory would assume that market forces "would influence institutions to assume competitive behaviours" *ibid* (p69) and that history has shown this not to be the case with academe being motivated by ideas of academic excellence and not productivity. Whether this claim is true of the USA is open to question. However, whether any British University

academic or administrator would accept this view in the nineties strikes me as highly improbable. Other criticisms such as that human capital theory does not adequately address issues of equity and constraints on its attainment, or that it does not always accurately predict student enrolment patterns in response to "price" changes would only have some validity if human capital theory ever claimed, and it does not, that education is the only factor influencing occupational mobility and that "price", however measured, is the only factor influencing student enrolment.

For the purpose of this study, human capital may be seen as relevant in the sense that as the reward system, the funding method, changes do institutions adapt their own internal allocation and incentive structures to "push" individuals in the direction(s) perceived to maximise the institution's success in raising income/reducing costs. The longer the planning period over which they are prepared to take action now, presumably incurring both financial and psychic costs, to enhance their future economic viability, the stronger would the explanatory power of the model appear to be. If institutions do not respond to the changed incentive structure this would indicate that the human capital, and most economic models for that matter, either have little validity in the university world or, and this seems more improbable, the structures already existing were appropriate to the changed funding method.

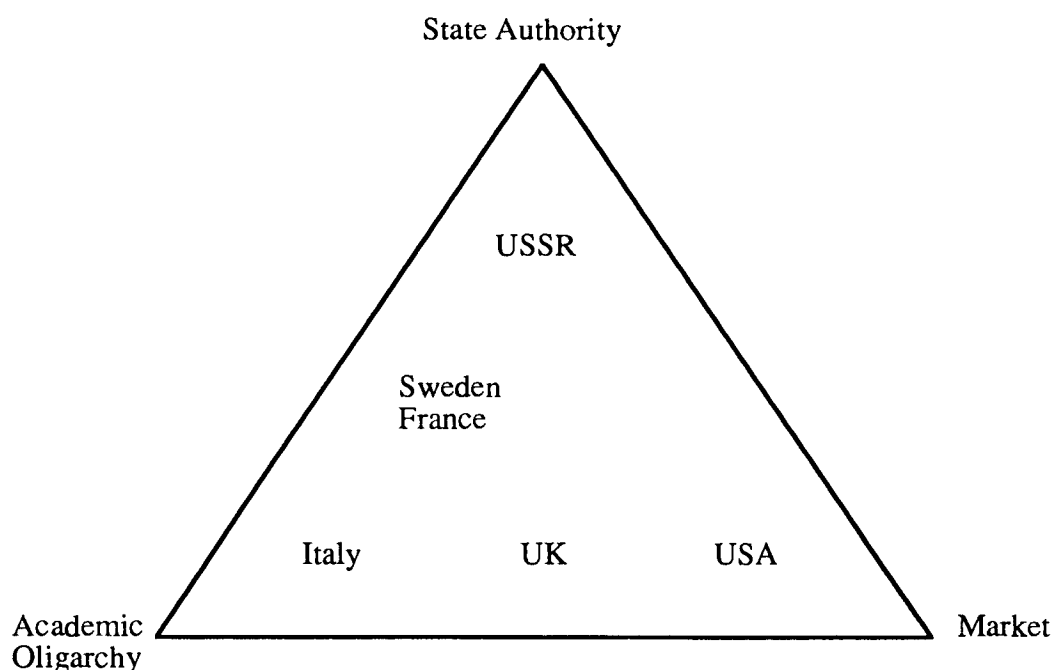
The paragraph above indicates one way in which the human capital model relates to this study: do the institutions and individuals behave as though motivated by future as opposed to present economic gains? As described above some proponents of human capital theory, Schultz and Psacharopoulos also claim that investments in education do result in an increase individual income and productivity. This proposition cannot be tested in this research. However our evidence will indicate what effect funding changes have had on the quality and quantity of teaching and research. If these have risen then funding policy will have added to the sum of

human capital - a stated policy of government. If there are ambiguities in our findings these will be explored and some resolutions will be attempted as to the effects of government policy on human capital formation.

The Clark/Williams Model

Burton Clark's "The Higher Education System" (1983) identified four main types of institutional control: bureaucratic, political, professional (or collegial) and market (pp145-171). These he placed on a continuum from bureaucratic (involving a heavy dependence on authority) to market (involving a heavy dependence on exchange). By combining bureaucratic and political models under the rubric of state authority and defining professional (collegial) models as indicative of academic oligarchy he reshaped this continuum into a Triangle of Coordination shown in Figure 1.

Figure 1 Triangle of Coordination



The position of countries depicted in Clark's diagram, if true in 1983, is **certainly** not so in 1997.

Williams (1984, 1988) developed Clark's model into one describing alternative methods of funding institutions with implications for the efficiency with which institutions will function. Williams characterises three models of funding the "bureaucratic", "collegial" and market model. We consider each in turn.

The Bureaucratic Model

Under the 'bureaucratic' model, financial decisions are usually taken at a **senior** political level, often the central government; this authority decides both the resources available to the education sector and the rules according to which these resources are distributed between institutions and within institutions. The looseness and flexibility of the rules will determine the 'freedom' of action of institutions, departments and teachers, but because this 'freedom' is subject to bureaucratic control it can always be reduced by some tightening of the rules. So, the measure of control exercised under the 'bureaucratic' model will vary according to the degree of discretion allowed administrators and teachers at the various levels of the system. A situation in which the responsibilities of institutions are being laid down more explicitly and their rules of accountability also clarified and strengthened reflects a "bureaucratic" mode of control where the rules are being tightened.

The merit claimed for a "bureaucratic" method of funding is said to be both quantitative, in so far as educational provision can be adjusted to meet manpower 'needs', and qualitative, in so far as educational standards can be adequately protected from above. The principal demerit is the fact that administrative regulations tend to be cumbersome and inertial in effect, preventing institutions from reacting quickly to changing circumstances. This system of funding, may therefore, discourage innovation. There may also be some loss of academic

autonomy. Whether this loss of freedom is viewed as desirable or not may well depend on what the objectives of institutions, e.g. universities, or their funders, are perceived to be and whether academic freedom is seen as inimical to the attainment of those objectives. There may be costs in addition to the loss of academic freedom. The more complex that the regulations are the more they are likely to cost to implement and to monitor. If there are appeals procedures then these too will augment costs. There may also be damage to staff morale undermining their effectiveness - a cost too often overlooked by administrators when introducing new systems of accountability and control. Evidence from the UK regarding the effect of the "bureaucratic" model suggests that it may adversely affect both internal and external efficiency (Mace, 1993 and 1995).

Evidence concerning the operation of the Joint Training Partnership Act (JTPA) in the USA suggests that their "bureaucratic" model, with its emphasis on output-related funding, has resulted in significant losses to both external efficiency and equity.¹ (Bureaucratic models are more usually associated with input related funding). To quote from Green and Mace 1994:

"The problems associated with performance-based contracts (PBC) are undoubtedly a consequence of the type of PBC that have been used, i.e. contracts in which a large proportion of a provider's payment is dependent on trainees completing and being successfully 'placed'

The major problem identified with PBCs was said to be 'creaming'

.... "there is a built-in incentive to 'cream' for both providers and SDAs (Service Delivery Area) because payment and incentive money are related to success in placement. Even with the new legislation some scope for creaming and cheating will exist because, we were told, disabilities (a barrier to entry) may be exaggerated by providers and within the other 'hard

¹ The JTPA was a billion dollar plus government initiative to promote training and employment, with particular emphasis being given to the most disadvantaged in society.

to serve' categories there will be a tendency to recruit trainees who have more education, are more motivated and have greater ability. It is difficult to see how this type of creaming can easily be stopped. Nor would it necessarily be desirable to stop it since more motivated trainees are more likely to benefit from training than unwilling recruits".

(Green and Mace, 1994 pp29-30).

They comment also that the quality of training appeared to be very low, although the Government's intention had been to encourage and improve training. Green and Mace's evidence illustrates the way that inefficiencies and inequities may arise from a bureaucratic funding model that has not been carefully designed and effectively monitored. In the case of JTPA inefficiencies arose because payments were being made where no training or long term "placement" in jobs was taking place. Inequities occurred because the "hard to serve", who were supposed to benefit from the scheme, were often excluded because they were hard to "place".

The point is that once institutions understand the rules of the game they will manipulate them to their own ends, for example to maximise income, which may not be the same ends as those of the regulating body. The research assessment exercise which we describe in the next chapter is an illustration of a "bureaucratic" style funding method and as we report has resulted in institutional behaviour that may not serve either production or exchange efficiency. When we consider our evidence we will consider how the changed method of funding has altered institutional behaviour and make some tentative comments about its effect on efficiency.

The "Collegial" Model

The 'collegial' model contrasts sharply with the 'bureaucratic' model in that institutions are usually more or less financially independent, say, as a consequence

of past endowments, and are therefore free to manage their own affairs at will. The merit of this system is the academic freedom that is thereby achieved from outside influences. However, this freedom, far from supporting innovations, may actually be stultifying because it tends to turn education institutions into clubs operated in the interest of teachers. That is how Adam Smith saw the universities of Oxford and Cambridge in the eighteenth century:

"If the authority to which he (the college teacher) is subject resides in the body corporate, the college or university, of which he himself is a member, and in which the greater part of the other members are, like himself, persons who either are, or ought to be teachers, they are likely to make common cause, to be all very indulgent to one another, and every man to consent that his neighbour may neglect his duty provided he himself is allowed to neglect his own. In the university of Oxford the greater part of the public professors have, for these many years, given up altogether even the pretence of teaching The discipline of colleges and universities is in general contrived, not for the benefit of students, but for the interest, or more properly speaking, for the ease of the masters. Its object is, in all cases, to maintain the authority of the masters, and whether he neglects or performs his duty, to oblige the students in all cases to behave to him as if he performed it with the greatest diligence and ability".

(Smith, 1776, II, pp760-61).

Any system of funding education or training through general grants which are virtually guaranteed year after year is akin to the 'collegial' model. To some extent the old British system of making quinquennial grants to universities was very like the 'collegial' system. It had the advantage of protecting academic freedom and insured that those best informed about the needs of the institutions made the vital decisions about resource allocation. However, the problem with such a system is that the needs perceived by the academic community of a university may not be the same as those perceived by the government, or by students - exchange efficiency and, almost certainly, production efficiency will suffer (definitions of these terms were given in the previous chapter). It is largely for this reason (and the need to cut public expenditure) that the quinquennial system of funding university education in Britain was abandoned in the mid 1970s; ever since, the central government in the

UK has taken a more active part in determining the allocation of resources within the university system.

This model does not reflect current university funding methods and consequently our data will not shed light on how such a model does affect university behaviour.

The Market Model

In both the 'collegial' and 'bureaucratic' models, power is ultimately vested in a body, representing the government or university. This contrasts with a third model of resource allocation in education or training where control is much more diffuse and indirect. This is the so-called 'market' model and under it a provider's income is generated by selling its services - teaching, research and consultancy - to whoever wishes to buy them. In this model, power is shifted to the consumer and to the units which produce and sell the services. The characteristic of such a model is that resources will be allocated according to an incentive structure. To take an example from universities, if research is more highly rewarded than teaching, universities will devote more of its time and energy to research and vice versa.

The advent of 'full-cost' fees for overseas students in British higher education in 1980 heralded a major shift towards a 'market' model in at least a part of British higher education. The effects of this change have been dramatic for many British universities and polytechnics where foreign students form a large percentage of the student body: in consequence, they have developed new courses, tailored to the demands of foreign students and spent thousands of pounds per annum marketing their product. Also, it has been claimed that the quality of education has suffered (Times Higher Education Supplement, February 1985). Here, incidentally, is a good example of what a relatively small change in educational finance can accomplish.

The merit claimed for a 'market' based system of funding is that it causes higher education institutions to become more responsive to changing economic and social circumstances. In short, it forces the education system to adapt itself to the felt 'needs' of society and, in consequence, to become more efficient in the sense of providing the output that the economy demands. Of course, this claim rests on several assumptions (as Mace, 1993 points out) that consumers (students) are well informed about subject choices, that they are influenced by the labour market implications of these choices, that capital markets operate perfectly and that the labour market itself functions efficiently, providing appropriate signals to students.

Let us examine and consider the possible efficiency implications in using a "market" model. In order to achieve an efficient, optimal, allocation of resources it is necessary that the pricing policy in education should not be determined by market forces as this may result in under-investment in education for the following reasons: externalities, consumer ignorance, distortions in related markets, merit goods, decreasing costs, and principal/agent problems and equity.

Externalities: Some of the benefits of education may accrue not only to the individual user, but also to society at large. These extra benefits are called externalities. Examples of education externalities are said to include crime reduction, social cohesion, technological innovation and intergenerational transfer of knowledge from parents to their offspring. In deciding how much to consume, individuals generally weigh only the personal benefit against the personal cost; they should be induced to consider the impact of their consumption on others. A pricing scheme that results in just enough consumption to equate personal benefit with cost is therefore sub-optimal.

Consumer Ignorance and Merit Goods: Individuals may be unaware of all the personal benefits of educational services. In addition, even those who are aware

of them may have insufficient income to consume the minimum amount considered socially desirable by public authorities, without unacceptable sacrifices in the consumption of other basic commodities, such as food, clothing, and shelter. Thus, educational services are said to have the characteristics of “merit goods”. In other words, public authorities may have more information and resources concerning what is best for users than the users have themselves. To illustrate this point: the likely impact upon wages may be known by consumers, but the effects of education upon agricultural productivity, earnings in the informal sector, or upon family health and nutrition are much less likely to be anticipated (still less quantified), by purchasers of education.

Imperfect markets: “Marginal cost pricing may be inefficient because of distortions in related markets: the markets for inputs (such as teachers, when their salaries are inefficiently subsidised); and the markets for financial services (such as access to credit for educational purposes). Access to credit has important implications for efficiency. For example, without access to financing, a brilliant child from a deprived background cannot invest in education, even though the future returns may be very high. Thus, in the absence of a credit market, the social benefit of a unit of education may exceed the private benefit”. (Jiminez, E.1987, p23).

Decreasing costs: Scale economies are a well-known cause of market failure, leading to monopoly. Scale economies are particularly likely to occur at higher levels of education, for example in the purchase of expensive laboratory equipment. But they may also occur at lower levels of education where the bulk purchase of such items as books and equipment may enable large discounts on price to be obtained. A further point about costs, markets and efficiency concerns the way in which *transaction costs* may rise if markets are developed in education. (Bartlett, Le Grand (1993)).

Principal/Agent problems: “The relevant decision-making unit for matters to do with school attendance is the household - or, more accurately, the parents within it - and not the child. Thus, whereas rates of return to schooling compare the returns to the pupil with the costs to the parents, in fact the important issue is the perceived balance between the costs and benefits to the parents of sending their child to school. Since only some portion of the returns to schooling will accrue to parents, there may be rational (if regrettable) reasons for households appearing to under-invest in schooling, notwithstanding its apparently high economic returns”. (Colclough 1993, p2, 3).

Equity: There are two kinds of equity concern in education. The first relates to the impact of education on the future distribution of income, while the second relates to access to education, in this case university education.

A "market" model may affect both types of equity if it results in policies, for example by imposing charges on students, which adversely affects the opportunities for certain groups to participate in university education. Whether this result is seen as inequitable depends on the value systems of those making judgements about equity. Even so, whether denying education to those able to benefit from it, but unable to afford it is deemed inequitable or no, it may also be inefficient if those denied education would have proceeded to become productive members of the labour market.

Since universities compete for students, research grants and contracts, consultancies etc. elements of this model of funding certainly exist in Britain in present. Our data will shed some light on the effects of such a system of funding.

The "Clark/Williams model" presents polar cases of funding models. In reality most funding methods are hybrids, having elements of two, if not all three, of the

different models described. It is thus difficult to derive testable hypotheses that our research could verify or refute. In addition, the individual models themselves may give rise to a degree of ambiguity. For example, the "bureaucratic" model does not define how loose or tight will be the regulations that institutions are obliged to abide by. If the rules are "loose" then institutions may pursue their own objectives, possibly reducing exchange efficiency through enhancing internal (production) efficiency if they allocate resources to areas in which they are most effective. The reverse position may obtain if the regulations are very tight. Thus we will make no attempt to "test" the models, though we will comment, on the relevance of our findings to these models in the concluding chapter.

Garvin's Model

Probably the most sophisticated analysis of university behaviour is that of David Garvin in his book *The Economics of University Behaviour 1980*. The book begins with a brief description and critique of the work of other social scientists' models of university behaviour. He argues, in particular, that one principal weakness of their analysis has been their failure to give sufficient weight to economic considerations in their models and thus, in his view, the models are incomplete and unable to adequately describe, predict and understand university behaviour. His work is an attempt to repair this deficiency by developing a model in which economic considerations are central. The novelty of his work and its relative sophistication are two reasons why we give it so much attention here. Another is that his study has been rather neglected by both economists and other social scientists, whereas it appears to us that there may be considerable potential in developing it if we are to understand university behaviour.

Garvin notes, as do all economists when discussing non-profit organisations such as universities, that in such circumstances market discipline tends to be weak. To put his own work into perspective he points out that although non-profit organisations operate within an economic environment (as do all organisations) where there may be certain elements of competition "goals other than those of efficiency may be guiding the allocation process" (p1). These other goals and their effect on internal allocation procedures have been paid little attention by economists. Instead

‘economists have traditionally focused on student demand and on rates of return on investments in higher education, rather than on institutional behaviour (the supply side) and its determinants’. (p2).

In contrast to economists other social scientists have been concerned with the organisational characteristics of universities and have, he claims, developed four models of university behaviour. These he describes as the "collegial", "bureaucratic", "political" and "organised anarchy" models.

The "collegial model" emphasises the common values unifying staff at universities and the consensual nature of the decision making process in institutions. In contrast the "bureaucratic model" emphasises the centralisation of power and the bureaucratic characteristics of universities and the influence that this has on 'university policy making, the conduct of research, and other aspects of academic life' (p3). The "political model" recognises that there are different interest groups in universities pursuing different agendas. University behaviour is only understood when these differences are recognised and in particular how power is distributed between the various groups. The organised anarchy model depicts universities as having

‘three general characteristics that set them apart from many other organisations and render classical models of decision making inappropriate, namely, preferences are problematic, technology is unclear, and

participation is fluid. In those circumstances, the *process* of choice becomes critical'. (p4).

and it is only when these processes are understood that university behaviour itself can be understood. (See Footnote 1 for a fuller description of the models).

The problem with these models, which are similar in many respects to Clark's is, Garvin claims, that they focus on internal decision making rules "while paying little attention to the environment within which universities operate" (p5). They are also difficult to test without the addition of further assumptions, also a feature of the Clark/Williams model discussed earlier. A third problem is that the models, unlike Culyer's model and the human capital model tell us little about the motivation of administration and faculty or, indeed, institutional goals. Their concern, Garvin asserts, is much more with differences in the structures and processes within institutions.

The economic model he develops is different: it assumes, as in Culyer's model, that administrators and faculties are motivated by self interest - "purposive behaviour is assumed throughout". He further assumes that behaviour is set in a market context, a market that operates both within institutions and between institutions. The model explicitly takes into account "the behavioural implication of different sources of costs and resources" (p5). (He does not, however, consider the effect of different funding arrangements on institutional behaviour).

His model he argues may be seen as complementary to the others he describes, rather than as a substitute. However, he does not show how the models can be integrated, if indeed they can. Thus we are not in a position to use the "hybrid" or integrated model to either explain why universities behave in a particular way or to predict how they will respond to a given change in their environment or conditions. Indeed, having said that universities operate in a market context he then modifies

this statement when he describes the higher education system (in the USA) as "segmented by geography, quality of institution, and highest degree offered" and thus that "aggregate figures which imply that these institutions all compete in the same market, are quite inappropriate" (p8). This statement will come as no surprise to anybody familiar with higher education anywhere in the world and nor will the claim that "Institutions of higher education, can be assigned to different submarkets on the basis of their location and their quality" (p10). What, perhaps, should have been explored is how institutions came to be in a particular submarket and whether, if they so wish, they can move from one submarket to another. Here the whole question of finance and of funding institutions could have been explored, but was not.

He makes the valid point that where institutions have greater prestige - prestige is generated by faculty, graduate programmes and the calibre of students - this will affect the size of its potential market and its ability to raise tuition fees. Institutions are competing in terms of what he calls "tuition-prestige"; institutions offer combinations of tuition and prestige in an attempt to attract students.

Garvin then develops analytical tools to demonstrate that universities do compete in a highly segmented market and that the policies and internal allocation procedures of universities reflect their goals. These goals "were taken to reflect the utility maximising preference of its (the university's) administration and faculty" (p161). But Garvin does not explore how the goals are established. Are they internally set, externally established, or is it some combination of the two? Nor does he explore what Culyer makes central to his model, how conflicts, for example, between management and faculty, are reconciled. Although costs and revenues associated with different actions are explored and used to explain, for example, tuition levels, other factors could also have explained these tuition levels within the same costs and revenue structure. These other factors, such as organisational structure or

personality of the chief executive, could also have explained alternative policies towards tuition.

Garvin shows that he is aware of some of these problems when he states

‘The coerciveness of the market, however, can be easily over emphasised. Universities, because of their heavy reliance on revenues from nonstudent sources, their unwillingness to set tuition at market-clearing levels, and their status as non-profit institutions, are often subject to only weak market discipline. It therefore becomes important to understand the goals being pursued by institutions, and how these goals are effected in the setting of policy’. (p52).

If we look in more detail at Garvin's analysis the weaknesses of his analysis become clearer. For example, in his analysis of graduate and undergraduate programmes, pp44-53, he appears to suggest that departments' and institutions' behaviour is determined by their utility functions. Those functions are dominated by the need for "prestige" which is related to quality of faculty, quality and size of graduate programmes, and research income. Although he provides plausible explanations for behaviour, for example in explaining the growth of graduate teaching, he is perhaps a little less persuasive in the contrasts he depicts between high and low prestige departments.

‘For the departments of high prestige, increased research funding led to a commensurate increase in the demand for graduate students as research assistants, and to the subsequent expansion of graduate programs. At the less prestigious departments, expanding graduate programs served as a vehicle for attracting a larger and more qualified faculty, greater prestige, and, only later, a larger volume of sponsored research’. (p52).

How departments became high or low prestige in the first place is not explained. Possibly this is a function of funding. Although Garvin recognises that budget constraints effect administrators in his utility maximising model, he does not incorporate this into his empirical analysis. Having described his model and its use in understanding university behaviour he goes on to explore its use in explaining the internal allocation procedures of universities. However, as he concedes, "an

analysis of the university's internal organisations yield important insights into its behaviour, many of which could not be derived from the utility maximising model presented earlier" (p59).

The fact that a number of ad hoc assumptions have to be introduced to explain internal organisations testifies to the fact that his theory suffers from some of the weaknesses he identifies in the non-economic models he criticised. Garvin seems to recognise this point when he states "the two approaches (the utility maximising model to explain institutional behaviour and the internal organisational model) are designed to answer different questions

‘The utility maximising model is quite abstract and necessitates a high level of aggregation, while the analysis of internal organisation is more detailed and views university operations through a finer filter. As such, the two approaches are designed to answer different questions and to provide different insights, with the former taking a more macro organisational view and the latter a more micro analytic perspective’. (p59).

However, in this case does the model generate testable predictions? It does not. Nor does it seem reasonable to assume, as he does, that there are not conflicts within faculty and between administrators and also between both. How are they to be resolved? One possible explanation is that whoever holds the purse strings and controls recruitment of staff and students determines policy, but this will differ between institutions and through time and, if so, whose utility is being maximised and what is the predictive power of the model across the university system?

There remains the further problem of whether a utility maximising model is the best model to explain behaviour. On pages 38 and 39 Garvin discusses two alternative models, the profit maximising and income maximising models. He dismisses both as inadequate to explain behaviour. But are his grounds for dismissing them correct? Take, for example, the profit maximising model. Garvin says it is implausible for three reasons. The first is that they have no motive to maximise

profits because "universities are supplied with capital with no expectation of financial return". But, even if this is true for some aspects of public funding of universities (though surely not for much of their commercial funding), managers may want to generate a surplus to strengthen reserves or plough them back into desirable projects. Second, "most prices (for tuition), especially at state universities, appear to be well below those that would fully exploit their monopoly power". Do universities have monopoly power? The fierce competition for students and research income suggests otherwise. However, his own evidence does indicate that tuition fees can be raised and are raised when institutions have sufficient "prestige". (This is a scenario familiar to those who have examined the level of overseas student fees in the UK and observed how they differ between institutions). This may be seen as evidence of a segmented market in which institutions with greater prestige exploit their superior market position by charging higher fees. There is also evidence for this differentiation in the part-time MA market. (see Pratt (forthcoming)). Garvin's concluding point is that "universities do not seem to be minimising costs". They seem more concerned as he says, quoting from Bowen, to "raise as much money as they can and spend it". It may have been true in the past, but this is certainly not the case now, at least not in Britain. The move towards short-term and part-time contracts and the increasing number of redundancies (voluntary usually) and early retirements is testimony to cost concerns everywhere in tertiary education. Garvin's critique of the profit-maximising may have had some resonance in the sixties, certainly less so now.

Having discussed alternative models and developed his own model Garvin then uses it to attempt to explain institutional improvements in terms of "prestige" and the spread of doctoral programmes in the USA. We will only consider here the spread of doctoral programmes, and that briefly. (The "prestige" model reveals empirical results that are, to say the least "a bit ambiguous" (p40)). Garvin adopts what he describes as a market approach to the spread of doctoral programmes. He finds that

there was considerable variation in the number of new PhD programmes introduced in different disciplines over the short period (five years) that he examined and his model attempts to explain why those variations exist.

In his model the introduction of new programmes depends in the first place on student demand (number of BAs graduating in a discipline). It also depends on supply, with the establishment of new doctoral programmes depending on the elasticity of the supply of places at institutions already offering graduate training. If this elasticity is high, then more demand can be accommodated. If low, and existing programmes are unwilling to grow then "the increase in students seeking graduate training will translate into a demand for new doctorate programmes" (p140). However, "whether this demand will influence university behaviour is not at all clear" because it depends "on the preferences of faculty and administration in establishing institution's priorities" (p141). That is an internal imperative which may be in conflict with external demand. Garvin argues that public institutions are more likely than private prestigious institutions to respond to the external pressure if they are to remain competitive.

Other pressure identified as affecting the establishment of new doctoral programmes are variations in industrial demand, particularly in "large, service-orientated urban universities (which) consciously design their programmes to meet manpower needs of their local communities". This increased demand for manpower causes wages to rise in the areas concerned, thus further influencing student demand. The final influence is sponsored research. The availability of research funding increases the benefits to the institution of introducing a new doctoral programme. Sponsored research also reduces the costs to institutions of setting up new programmes, so there is also a supply side effect.

Garvin then proceeds to 'test' his model for new doctoral programmes by using rank correlations of the number and percentage of new doctoral programmes with increases in BA graduates and increases in sponsored research through regression analysis. The results are by no means clear. "One peculiar property of these questions is that they produce conflicting estimates of the relative responsiveness of new doctoral programmes to increased student demand and to increased research support" (p148). It is difficult to see how Garvin therefore justifies his claim.

'In spite of these conflicting results, the empirical work clearly confirms the importance of both student demand and sponsored research in explaining disciplinary differences in the rate of introduction of new doctoral programs' (p148).

Garvin then goes on to examine the diffusion of new doctoral programmes over a longer period than five years, a period of analysis that he acknowledges to be "incomplete". He develops a number of hypotheses, in which both supply and demand side factors are introduced. However, at the end he concludes

'Unfortunately, it is difficult to test formally any of the preceding hypotheses because most of the necessary data are unavailable. This chapter should, therefore, be regarded as exploratory, with most of its theories only tentative. A complete theory explaining the diffusion of new doctoral programs will require much additional evidence'. (p159).

Unfortunately, in making this statement he accepts how partial his analysis is and that like the models whose drawbacks he discussed in his first chapter, his model also lack(s) important details, "making them difficult to test without additional assumptions" (p4). Thus, although Garvin's model is of much greater sophistication than the previously discussed models and it makes explicit the role that economic analysis can play in understanding university behaviour it does not provide anything like the complete story.

It may be that the story would have been more complete had he given more attention to the insights that other disciplines could make - undoubtedly a very difficult task.

It may also have been improved by taking into account the influence on university behaviour of such factors as the way in which institutions receive their funding. If there are differences in this, as there certainly are in the USA, this might account for differences in the way that universities behave. Our research, though based on British experience, will certainly show whether funding method does affect university teaching and research and, if so, its importance in developing a model of university behaviour.

In this chapter we have critically examined 'models' that attempt to 'explain' how universities will behave in given circumstances. In the concluding chapter we will comment on how these changes relate to the models described above. As our examination of these models and, in the preceding chapter, economists' treatment of education production functions they do not provide a productive theoretical framework for investigating universities' responses to the changed funding method.

Many of the other studies of universities appear to have, implicitly at least, recognised the inadequacy of economists' work in this area and have been more descriptive/ analytical than theoretical. (See for example Williams, 1992, and Sizer 1989). This is a view that we share and is the reason why we adopt the approach to our research described in Chapter 5.

Footnote to Chapter 2

The *collegial model*, emphasises the common values unifying the members of academic institution, and is rooted in the traditional notion of a "community of scholars." According to this view, universities are characterised by an absence of hierarchy, decision making by consensus, and widely shared values, leading to general agreement among members on the purposes of the organisation.

The *bureaucratic model*, in contrast, emphasises the degree to which power is centralised. Universities, in fact, possess a number of bureaucratic characteristics, among which are a formal division of labour, an administrative hierarchy, a clerical staff, and the payment of fixed salaries. Thus, a number of analysts have argued that universities are more accurately portrayed as bureaucracies than as loosely knit communities, and have used that framework to explore how variations in these bureaucratic traits (e.g. the degree of administrative centralisation) affect university policy making, the conduct of research, and other aspects of academic life.

The *political model* emphasises the conflicts that arise between various groups within the university. Not only do faculty members, students, and administrators often have very different ideas about the purposes of a university and about appropriate policies for achieving its goals, the faculty itself seldom presents a united front, for faculty members in different disciplines often disagree on educational matters. The political model recognises the existence of these internal factions and argues that the precise distribution of power within a university, the nature of interest groups, and the political processes that are employed to resolve internal conflicts are important keys to understanding university behaviour.

Finally, some analysts have likened universities to "organised anarchies." According to the *organised anarchy model*, universities share three general characteristics that set them apart from many other organisations and render classical

models of decision making inappropriate, namely, preferences are problematic, technology is unclear, and participation is fluid. In those circumstances, the *process* of choice becomes critical, for the way in which various choices present themselves to decision makers can have an important effect on outcomes. As a result, differences in timing, in the rate at which new problems arise, in organisational structure, and in the degree of organisational slack are all viewed as important to understanding university behaviour.

Chapter 3: Recent Changes in University Funding

Introduction

This chapter is divided into three sections. The first briefly describes the general context in which universities operated in the eighties. In the second we introduce the major innovation in the funding of universities during that period, the introduction of an explicit funding formula in which the most important development was the RAE. In the final section of the chapter we examine some general problems with the development of performance indicators for universities.

The Funding Changes

The eighties and nineties have been a period of significant change for universities. It began with a 20 per cent cut in planned public expenditure, the biggest reduction in income ever imposed on British higher education. The reductions in real expenditure were of the order of 8 per cent. Over most of the period student numbers were rising rapidly, despite continuing financial stringency. As Williams has stated until 1992 “government higher education policy was dominated by two main concerns: to help reduce public expenditure; and to increase efficiency by encouraging institutions to ‘earn’ a larger proportion of their income from both government and non-government sources, and to be explicitly accountable for it. Early in the decade the first theme was dominant; by 1990 the second had become more important” (Williams, 1992 p4). Through most of the nineties the government was still demanding a considerable expansion of student numbers, without higher education receiving a commensurate increase in public expenditure.

There was a change in the balance between the different sources of income as well as a significant reduction in core funding.

The changes in universities' sources of income between 1980 and 1989 are shown in table 1 below.

Table 1

University Income by Main Source (£m at Constant 1979/80 Prices)								
Year	Ex	Home	Research	Other	OS Fees	UK	Other	Total
1979/80	1,050	210	-	-	46	-	359	1,670
1980/81	979	206	-	-	54	-	324	1,563
1981/82	943	235	-	52	66	-	300	1,596
1982/83	1,049	131	103	47	71	23	210	1,634
1983/84	1,015	126	111	51	76	27	237	1,643
1984/85	989	124	114	54	82	37	267	1,667
1985/86	955	121	116	59	91	43	285	1,670
1986/87	963	123	128	64	100	48	324	1,750
1987/88	942	115	118	64	100	50	333	1,722
1988/89	967	117	127	66	102	55	405	1,839

Source: University Statistics Vol. 3: Finance (annual). In 1979/80, 1980/81 and 1981/2 the NA (not available) figures are included in the 'other' column. Deflated by UPPI. Taken from Williams (1992).

The changes did not mean that total government support for universities had fallen since government support was provided through research council grants and government contracts as well as through exchequer grants and payment of home

fees. Thus, the two main changes to university finance were changes to the way in which government supports universities and a substantial increase in income from non governmental sources. Thus, the proportion of university income provided by government has fallen, even though in real terms the amount remained roughly constant.

Changes in the mechanisms of university funding were no less radical than the changes in sources of income. At the beginning of the 1980s the traditional block grant system of funding universities was still in place although it had been suffering "severe strains since 1974 when the quinquennial system of funding collapsed under the twin pressures of stagnant demand from students and very high levels of inflation" (Williams ,1992). In 1980/81 over 60 per cent of university income was provided as a single block grant from the UGC, and universities were not told how much was for teaching or research. Universities were aware that some institutions did better than others, but the UGC always maintained that the criteria that resulted in this must remain confidential for fear that if its assumptions in making the grants were known this would affect universities internal allocation of resources. (Ironically, the reason why the funding council reveals its criteria for awarding grants now is to influence internal allocations). In practice the grants were incremental in that, whatever the criteria used by the UGC to calculate them, universities received their previous allocation plus an increment which was always positive.

The somewhat cosy positions of universities changed in 1981 when cuts were imposed on the basis of a selectivity exercise taking into account research performances and 'A' level scores of university entrants. Universities were outraged by the severity of the cuts and on the non-transparency of the criteria used to inform these cuts particularly with respect to research performance. The cuts were extremely severe ranging from 6 to 30 per cent and they were to be

accommodated within a mere four years. The outcry from the universities, particularly those that fared worse, and the determination of the government to direct resources according to its own strategic priorities resulted in the development of a more systematic and explicit funding methodology by the UGC.

Subsequent developments in UGC funding strategies focused largely on the separate identification of resources for research and for teaching. One reason for this was the dissatisfaction of universities, particularly the most affected, with the criteria used in the 1981 cuts. Another reason was the view that discrimination was to become a permanent feature of the system. In addition, the National Advisory Body (NAB) was expressing concern about the wide discrepancies between resources per student in universities and polytechnics. As a consequence of these pressures, a systematic evaluation of research activity in each subject area in each university was carried out in 1985. This evaluation was repeated with some modifications in 1988/89, 1992 and 1996. In these exercises a specific proportion of the UGC grant was identified as being for research. In the first exercise 'R;' the research element, was divided into four parts:

- SR or 'Staff Research', intended to support the personal research of academic staff.
- DR or 'Direct Research', a contribution to cover the overheads departments incurred a grant from research councils and charitable bodies.
- CR or 'Contract Research' which provided a small bonus, some two per cent for research funding from sources other than research councils or UK charities.
- JR or 'Judgmental Research', allocated on the basis of judgements about the quality of research in each departmental cost centre in each university. In 1986

this was less than 35 per cent of the research component, but has risen **very** substantially since.

This quality assessment was based largely on evaluations of publications and **peer** judgements.

Williams (1992) summarises the period in the following way.

‘It is misleading to consider the 1980's simply as a period of **cuts in** higher education resources. It was rather, one of changing **patterns of** finance. Overall there was some modest growth in institutional income and, in contrast to the previous decade, student numbers **grew** substantially. However, there were considerable changes in the sources of funds, the channels through which they became available to universities, polytechnics and colleges, the relative shares of the two sectors, and the activities for which they were used. Restructuring imposes strains on any management system. Some universities and polytechnics undoubtedly adapted to these changes **much more** successfully than others, and many certainly did experience a decline in the real resources available to them’.

This pattern of cost cutting, striving for efficiency gains and increasing university accountability has continued since. Universities are still being required to **make** efficiency gains annually, although this may be modified soon. Some universities are coping with this requirement rather better than others. Cost cutting, university student expansion, and a whole raft of government initiatives such as the establishment of interdisciplinary research centres (IRCs), the introduction of the Engineering and Technology Programme (ETP) and the Enterprise in Higher Education Initiative (FHE) have all affected university behaviour in the late eighties. In addition there has been the Jaratt and Merrison Reports, both of which have resulted in organisational, management and other changes in universities. (The reports are summarised in Appendix 1). But, above all, as an influence on university behaviour, management and the planning of educational and financial strategies has been the change in the method of funding.

Until the eighties the funding councils provided the core funding to universities in a continuing and reliable way. Following the draconian cuts of 1981 there was a switch from the implicit, opaque and historically based funding method to a method of funding that was based on a much more explicit criteria. If these criteria were not satisfied, funding for a given university would suffer. This change in funding method meant that funding council money, formerly, so dependable became "soft" money, as Williams has put it, rather than "hard" money as in the past. The changes introduced in 1986 have remained basically similar to this day. The principal feature of the funding change, as stated earlier, is that in grants to universities the payment for teaching and research is separated and that the research allocation is dependant on the "quality" of research at a university. The payment for teaching is based on the number of students studying multiplied by the unit of resource for the subject they are in and the level of the course. The research component of grant allocation is rather less straightforward than that for teaching and it has undergone some modification. The changes are described below.

There have been four research assessment exercises to date, 1986, 1989, 1992 and 1996. There have also been proposals for changes to the assessment of teaching and when put into effect these will undoubtedly affect institutional behaviour. Currently, however, the university funding mechanism with respect to teaching does little more than reward institutions in much the same way as before 1986 i.e. based on student numbers, adjusted for subject area, level of course, and the status of the student, full or part time. There have been some changes within universities in response to the threat to alter funding according to the quality of teaching, rather than according to the numbers enrolled. Funding for teaching, however, is still determined essentially by numbers, adjusted as stated above, and although there have been moves within universities to promote teaching quality through the development of "relevant" quality assurance mechanisms and structures, to date this has not greatly impacted on resource allocation within institutions. No doubt when

teaching quality does affect funding institutions this will change their behaviour as it did with respect to research, though not necessarily in the same way. This change in behaviour, if it does take place, would reinforce our contention that funding method, including the PIs used in it, is the central engine driving change in university behaviour. Since those funding changes are, as yet, undeveloped we will here confine ourselves to the changes currently affecting university behaviour and those that have been explored in our research.

The research assessment exercises (RAE) have had a single objective, "the purpose of the exercises has been to produce ratings of research quality for use in the *determination* of the grant for research" (my italics) (HEFCE, 1993, p1). The Report on the 1992 exercises is very clear as to the impetus for funding councils' involvement in research evaluation. Public funding constraints were affecting higher education from the early 1980's and "The initial impetus for the University Funding Council's (UC) involvement in research evaluation arose from the public funding constraints applied to higher education in the early 1980's. With the UC responsible for funding both teaching and research and the real value of grant falling year by year, the Committee perceived selective funding of research as the only means of protecting the quality of both. The UC's Strategy Advice of September 1984 announced the Committee's intention to 'adopt a more selective approach in the allocation of research support among universities in order to ensure that resources for research are used to best advantage" (Williams 1992).

This selective approach resulted in the 1986 exercise described earlier. It comes as no surprise that universities unused to such exercises, and where many of whose members did not receive the grades expected, were extremely critical of the exercise. The UGC for its part was somewhat defensive about its procedures although as the first attempt "in any country to make a comprehensive assessment of university research ... (it is not) surprising that it was imperfect and came in for

criticism" (Williams *ibid* p1). (In the section on performance indicators we describe and discuss these criticisms so we will not discuss them further here. Further comments are provided in Appendix 2). Suffice to say there were changes to the 1989 exercise in an attempt to take account of these criticisms. There were still many criticisms of the exercise, given in the section on Performance Indicators (PIs). In the 1992 exercise, the funding council, then the UFC soon to be replaced by the Higher Education Funding Councils, again attempted to take account of the criticisms levelled at the previous exercise. These are discussed in the next section.

The obsession with the development of PIs of research continued and the latest instalment, the 1996 and fourth exercise, dominates the thinking and behaviour of universities. Whether an "old " or "new" (mainly the former polytechnics) university the money available through this exercise will crucially affect their future position in the university system. For the 'new' universities it is an opportunity, available in the 1992 RAE but not exploited by many, to enter research as a significant player. For the "old" universities the choices, are, perhaps, even more significant. Are they to remain in or to enter the "elite" able to enjoy, disproportionately, funding council research grants, research council awards and contracts and grants from other sources, principally charities, government departments and private commercial and industrial firms? Or are they, if unsuccessful, to become the "teaching factories" of the new system, condemned through inadequate research ranking to an inability to provide a high quality research infrastructure, including top researchers, and, commensurately, to attract the "best" research students? For all universities, 'old' or 'new', the new funding mechanism with its emphasis on the allocation of research funds through a PI, the RAE, has crucial implications. Given this importance let us consider in general terms the use of PI s to evaluate universities and in the next chapter the effects that the RAE is claimed to have had within four disciplines, psychology, geography, chemistry and economics.

Performance Indicators for Teaching and Research

Introduction

In the previous section we described some of the changes experienced by the university system in the eighties. As we pointed out the most important of these changes has been to the method by which universities are funded, with the replacement of a rather opaque method by an explicit funding formula intended to make the whole system more transparent. Within the formula the most significant development was the introduction an indicator of research performance through a research selectivity exercise, later known as the RAE. The purpose of this section of the chapter is to describe and critically examine the development of PIs in the UK university system and to make a number of general points about the development of research performance indicators. As such it may be seen as a development, though not of theoretical nature, of the concern with university productivity which we examined earlier: we are concerned with universities' staff responses to funding changes and these responses are necessarily correlated with the overall performance/productivity of the universities.

Before examining in detail the use of PIs in British higher education it should be noted that the development of PIs for universities is by no means confined to Britain (see, for example, Dochy et. al. (1989). This book explores many of the problems associated with PI s such as their reliability, validity, objectivity, ambiguity, level of aggregation and usefulness. As we shall show similar concerns have been expressed about the university PIs developed in Britain. The book does not explore two further concerns that have also been expressed about PIs: their costs relative to their benefits and the lack of any theoretical underpinning of the PI s developed. Concurrent with the introduction of the RAE in Britain there were already other

indicators of university performance being developed. However, unlike the funding council's PIs funding was not dependent on these other indicators.

These PIs were produced in response to the report of the Steering Committee for Efficiency Studies in Universities (the Jarratt Report 1985) and are periodically published by the CVCP/UGC as *University Management Statistics and Performance Indicators* since 1987 . It must be conceded that despite Jarratt's injunction that:

'A range of performance indicators should be developed, covering both inputs and outputs and designed for use both within individual institutions and for making comparisons between institutions.'

(Jarratt 1985, p36)

the thirty nine indicators have been developed their meaning for performance may be somewhat ambiguous. Thus we have interesting and qualified tables showing such things as 'research income per FTE academic staff' and 'telephone expenditure per FTE student', but what do they mean for performance if they are rising or falling? The performance indicators that funding council is concerned with are rather more sophisticated and we now examine these.

Teaching

Since our concern in this research is with the effect of funding change on staff perceptions of changes, if any, to their research and teaching outputs we will consider two PIs used by the Government and the CVCP to evaluate these outputs: degree results and research. We recognise that it can be argued that the first PI, degree results, is only one measure developed to evaluate teaching performance; other measures developed include unit costs per student, non-completion rates, employment success rate and, more recently, the quality assurance mechanisms. None of these is so clearly an output measure as degree results. We note in passing

that the method used for the new quality assurances seem more concerned with processes than outputs. There have been questions raised as to whether HEFCE methods of teaching assessment have really got much to do with teaching quality. To illustrate this point consider the HEFCE lecturer assessment documents assumingly reported in the Evening Standard by Allison Pearson (Evening Standard 7/11/95, p11).

Included in the advice for assessors are: "Giving and receiving feedback to another person can be a powerful way of providing help if it is constructively handled by both people concerned". (The) "Observer" observes. Observer gives observee feedback. "Every five seconds, the assessor is to count the words and silences and marks them in little square boxes on a grid. High scores are awarded for non-verbal communication (good use of eye contact, no distracting mannerisms) and visual aids (the overhead projector is a particular favourite)".

The crucial question for teaching assessment surely concerns the student learning which is taking place and it is by no means clear that this is the focus of the HEFCE exercise. We recognise that there are intrinsic problems to do this satisfactorily. Instead we shall focus on what appears to be a less problematic way of assessing teaching at universities, that of degree results. It is certainly a method which appears to have some appeal to both the funding councils and the CVCP since it is prominent in their publications on performance indicators in universities. (See UGC/CVCP 1987 onwards). Superficially, degree results certainly appear an attractive PI since a degree is the (apparently) most obvious outcome of teaching activity. Indeed the 1987 White Paper makes this point clear:

"Academic standards and the quality of teaching in higher education need to be judged by reference mainly to student's achievements. The numbers and class distribution of degrees awarded provide some measure as, conversely, do non-completion rates.

(DES, 1987b: p28).

If we take the measure of degree results as the percentage of those with first or second class honours we see significant differences between universities (see Johnes and Taylor, 1990, p106).

However, before using these results as a PI we need to be assured that we are comparing like with like. The most obvious causes for difference would, Johnes and Taylor argue, be differences between student characteristics and difference in university characteristics (ibid). For example, are students of equal ability attending universities, is the gender balance similar, do similar proportions live at home, and is English language competence of all students similar? Each one of these possible causes of difference is itself beset by problems. To take student ability, is this to be measured by some intelligence measure? (We will not here rehearse all the arguments surrounding views on this matter). Should we use instead 'A' level results, which are certainly convenient because they are so readily available? However, these results are nonetheless suspect because of variations of standards and curricular content across examining boards, because of variations between subjects and through time and also because of the fact that increasing numbers of students are entering university without 'A' levels, through access and alternative routes.

If we turn to university-related factors, differences may occur because of: difference in staff: student ratios; difference in subject mix (some subjects have consistently higher proportions of first and upper second than others); difference in university histories; difference in library facilities. All the above factors and more were examined by Johnes and Taylor (1990) in what is the most comprehensive study to date of the use of PIs in British universities. Johnes and Taylor use regression analysis to discover whether the factors mentioned above independently affected degree results. Those that were significant were used to construct an index that allowed the raw degree results to be standardised. The correlation co-efficient

between raw degree results and standardised degree results never exceeded 0.42 in any of the four years for which Johnes and Taylor performed their statistical exercise. This suggests actual degree results may be, at best, singularly misleading as a PI. To quote at length from Johnes and Taylor:

"Using regression analysis, it was found that over 80 per cent of the variation between universities in degree results can be explained (statistically) by a set of plausible explanatory variables, the main one being the mean A level score of each university's student entrants.....

Other variables also played an important part in explaining inter-university differences in degree results. These include the percentage of students living at home during term time and type of university (i.e. ex-CATs, new greenfield universities, civics and Scottish universities).....

although a performance indicator can be constructed based upon the variation in degree results *not* accounted for by explanatory variables such as A level score, it is by no means certain that such an indicator would be useful for measuring performance.

Finally, a further problem of using degree results as a performance indicator needs to be underlined. Degree results are under the direct control of each university's examining body, and although these are advised by independent external examiners there may nevertheless be a strong temptation for universities to award more 'good' degrees if those with unfavourable degree results are seen to be penalised in the allocation of funds. This would inevitably result in a general upward trend in degree results and a narrowing of differences between universities. It may therefore be inappropriate to use degree results as a target variable since this variable is itself determined by those who are affected by it".

(Johnes & Taylor, p117/8).

It may be that if Johnes and Taylor had included in their analysis the leadership qualities of different university heads, differences in the structuring of curricula, courses and teaching method, and included a control for certain characteristics of teaching staff, they may have reduced the 20 per cent residual from their regressions. However, their research nevertheless, does demonstrate the naivety of these measures of output.

Further questions are raised about whether standards of degrees themselves may be changing. The HEQC's interim report, Graduate Standards Programme, reports on a study of degree awards in eight subject areas over 21 years in what it calls "pre-

1992 universities", or old universities. The subjects examined were civil engineering, French, physics, history, biology, accountancy, mathematics and politics. It found a "general increase" in the proportion of "good" degrees, that is 2:1s and above, in all the subjects areas studied. The increase was mainly linked to an increase in the proportion of 2:1s awarded, but all subjects, especially in recent years, showed a rising trend in the proportion of first-class honours degrees. The report also stated that the 2:1 has now become the modal degree class across the university system in all subjects studied, except civil engineering and maths. In 1973 similar research revealed that a 2:2 was the modal degree. The report also found substantial variation in the proportion of "good" honours degrees awarded by different institutions. The proportion of total graduates who were awarded a 2:1 or above ranged from less than 30 per cent in some institutions, to more than 70 per cent in others.

Such evidence is treated as sufficiently important by the HEQC for it to include in its next phase of the graduate standard programme plans to examine "criteria for honours worthiness" (ibid). Our research, both through the questionnaires and interviews, may shed some light on university staff's perception of what has been happening to the quality of teaching and degrees.

Research

Probably the most influential, and certainly the most visible, PI for universities has been the establishment of a number of research selectivity exercises in which research PIs were established to evaluate the quality of research in university cost centres/departments. The funding council grant received by a university depended to a significant extent on the research grades awarded to its cost centres. It has been funding council policy to make the research grade increasingly important in the allocation of funds to universities. Any evaluation of the research selectivity

exercises is hampered by the lack of openness about the precise methods used, by the fact that the methods used differed across fields of study and by the fact that the methods are said to have changed somewhat between the different research exercises.

To illustrate the change in method:

"The 1986 exercise was based upon peer review with little emphasis being placed on the actual research output produced by universities. Subject panels consulted well-known academics in each subject area and research councils provided information about research grants awarded during the previous five years. In addition, each university or cost centre was asked to submit an extremely brief account of its research performance and future research plans and to select five recent publications which accurately reflected the research work being undertaken in each cost centre (or department in many cases)".

(Johnes & Taylor, p155/6).

The very limited approach adopted in the 1986 exercise was criticised on several grounds. The main criticisms made by the HEFCE itself included differences in assessment methods across subjects, that rankings seemed to be influenced by research grant income and that little attention was given to work in progress. (The full list is given in Footnote 1).

The UFC adopted a more comprehensive and more formal approach to its 1989 exercise. In particular, more data describing research *output* (we discuss their output measures later) were collected and used in the 1989 exercise. The UFC was keen to stress that the assessments made by advisory groups and panels were 'output led' (rather than 'income led' as in the 1986 exercise). (The method of assessment is given in footnote 2).

Johnes and Taylor (1992) give five criticisms levelled at the 1989 research selectivity exercise. First, there was inadequate consultation in the design of the questionnaire. Second, and as with the earlier exercise, it was claimed that the

process of evaluation was undertaken too hurriedly, with only three months allowed to evaluate the research output of the entire UK university sector. Third, assessment was based on the research output of all full-time academic staff in post during the assessment period, but since staff turnover was high in some departments, such a procedure might give a misleading impression about research potential of a given department. There were also inconsistencies in defining research output. These included, edited books being counted as authored books; book reviews being included as articles; unpublished research reports included as books; co-authored books included twice (or more) under separate authors; no distinction being made between publications in non-refereed journals and in refereed journals.

Finally, there was still concern about the five-point rating scale and whether it enabled comparisons to be made between different subjects. There was some dissatisfaction, particularly from subjects with low mean scores about inter-subject differences in scores. The circular letter from the UFC shows a wide discrepancy between scores with for example, Pharmacology (3.6) Classics (3.3) scoring significantly higher than, for example, Education (2.5), Anatomy (2.5) and Clinical Dentistry (2.4). It is possible that these scores do reflect differences between the subjects, but if they do not it undermines one of the purposes of the RAE. This was to provide universities with guidance in the allocation of research funds between subject areas, the intention being to encourage a shift of resources away from low-rated subjects towards high-rated subjects. This would be efficient only if the ratings were comparable between subjects. If there are reasonable doubts as to whether this is the case it would be unwise for universities to shift resources between subjects.

Some institutions have in fact pursued policies precisely the opposite from those intended by the UFC and shifted resources towards low rated cost centres (Williams

1992, Mace, 1993). This policy makes sense for a very obvious reason: it is easier to increase the rating of a low rated department than a high rated department and the increased rating attracts an increase in funding council grant. It appears that universities are aware that the law of diminishing returns applies in the research selectivity exercise. There may also be other reasons for not reallocating resources towards high rated cost centres. For example, reducing resources provided to the low rated areas may affect the balance of a university's academic offerings in a way unacceptable to its management. Universities may also recognise that there are economies of scope to be realised by retaining and supporting a wide range of cost centres and academic activities.

The problem of comparability across subjects mentioned above has been acknowledged by the UFC but was not regarded as being of any great significance. (P. K. Jones, 1989, p17).

"Anxieties were expressed in some panels that they were being 'tougher' than others but Executive monitoring and guidance seems to have avoided this".

Additional criticisms, again cited in the HEFCE report, included: Little information was published on the criteria that would be used by panels making it difficult for universities to determine their best strategy for presentation; lateness in providing list of units of assessment; the exercise favoured large departments, particularly in the physical sciences, the ratings in the sciences favoured excellence in basic and strategic to the disadvantage of applied research.

Finally, there was some evidence of cheating, "mis-reporting" as the HEFCE puts it in the 1989 research assessment exercise. In some cases, inaccurate publication dates were included in order to gain advantage and publications were included when they should have been attributed to another institution (HEFCE 1993 p2).

The 1992 exercise was more carefully prepared, but many of the problems cited above remain and can be found in the HEFCE's own words. In brief they are:

- “(a) Little information was published on the criteria that would be used by panels, and even the 5-point rating scale was published at a late stage of the Exercise, making it difficult for universities to determine their best strategy for presentation.
- (b) The full list of units of assessment was not settled in advance and, when it was agreed, was so large as to enable some universities to gain an unfair advantage.
- (c) Some of the forms were unnecessarily complex; in particular there was need for more precise definitions of publications.
- (d) No facility for systematic verification of the accuracy of the submissions was built into the Exercise, and there was some evidence of deliberate 'mis-reporting'.
- (e) The Exercise favoured large departments, particularly in the physical sciences.
- (f) The ratings in the sciences favoured excellence in basic and strategic to the disadvantage of applied research.
- (g) By assessing all staff in post for any part of the 5 year review period, the Exercise was unduly retrospective”.

(HEFCE, 1993)

One factor that has not received adequate attention by the HEFCE is the enormous cost of the exercise and how this related to the benefits. Further, the measure of research output, though more sophisticated in the 1992 exercise, still suffered from serious flaws. To see why this is the case let us consider the major factors that have been used by the funding councils to measure research performance: peer review, publications, and research income. And, although it has not been explicitly included in the RAE, we will also comment on another measure of research performance, citations, that may also have influenced members of the assessment panels. Each of these measures is bedevilled by problems which are briefly recounted below. These are not considered by HEFCE but we consider they are of fundamental importance to the success or failure of any research assessment exercise.

Peer review: Tognalini is one of the commentators who has a positive view of peer review. He states:

"Peer reviews are often seen as the *PI par excellence*. Peer reviews serve at least four important functions:

- (a) they bring to the decision-making process knowledge and perspectives;
- (b) they enlist colleagues and thus have the potential of improving the wisdom of those decisions and fostering acceptance of them;
- (c) they protect staff from both the appearance and reality of outside pressure; and
- (d) they create forms of accountability such that the choices finally made are more likely to be reasoned and defensible.

An important dimension is that the process and outcomes are clearly understood".

(Tognalini et. al., 1994, p155)

A number of criticisms have been made of the peer review and these certainly indicate a less sanguine position than that taken by Tognalini. (See, for example Anderson (1978), Johnes and Taylor (1990), Johnes (1987,1990)). The most obvious criticism of peer review is that any measure based on the opinions of others in the field will inevitably be highly subjective: ratings are likely to be heavily influenced by the individual reviewer's personal interests and by his or her loyalties and affiliations to particular institutions.

Further criticisms include the fact that ratings based on peer review are also influenced by 'halo effects': individual departments, or cost centres acquire benefits from the overall reputation of the institution as a whole. The reputation of a department can be considerably boosted by the presence of one highly productive and eminent researcher. The department may retain this reputation long after the eminent researcher has left and may no longer be deserved. The problem here is that unless 'peers' are alert to all developments in their area, and this may include new interdisciplinary developments, there is a danger that their judgements may be

out of date. Also, as Johnes (1989) has shown large departments appear to have an advantage over smaller departments when evaluation is based on peer review. Probably, this is because a large department is more visible than a small one, and there is more chance that someone on the review panel will know the work of at least one of its members. (Though being 'known' by a member of a panel may not always be an advantage, if there is personal jealousy or little respect for the departmental academic's work!) One final point is that the practice of peer review may encourage departments to spend more on enhancing their image outside their university in an effort to increase their ranking. From society's and the funding council's perspective this would almost certainly be seen as an inefficient use of scarce university resources.

Publications: Publications have been a major determinant of research rating in every RAE, presumably because they are the most obvious evidence of research activity. Moreover, they are usually considered to be a more objective measure of research output than those based on peer review.

"In general, a publications count is based on refereed publications in academic journals. Any count derived using all forms of publication (e.g. books as well as papers) requires a weighting system to reflect the relative merits of the various forms of publication. The suggestions for the weighting of journal articles to books have ranged from 1:4 (Crane 1965) to 1:18 (Meltzer 1949; Manis 1951)".

(Johnes and Taylor, p149)

If a count of publications relies on obtaining a list from each department its success clearly depends on the degree of co-operation from individual departments, if they have such a list themselves. If it is obtained from journals there is the problem of deciding which set of journals to use to ensure that they adequately reflect the research activities of a specific subject area - biases will inevitably result. As Johnes has shown the selection of journals in a specific subject area because they are generally considered to be of high quality and of general interest would result in

a bias against highly specialised research areas (Johnes, G. 1988). (This is the major concern of Harley and Lee about the ranking of economics (see next chapter)). A further problem is that academics who publish 'outside' their own specific subject may well not be counted in their department's submission, thus disadvantaging the department and the academic concerned. Indeed, since they are also unlikely to be included in the submission of the department that does research in the relevant area, the individual, the department and the university may all be disadvantaged.

Journal articles vary in length (though this does not necessarily reflect the quality) and it could be argued that a publications count should take this factor into account. Indeed, if no account is taken of article length this could lead to a proliferation of short papers in order to boost research 'output' and hence the ranking of departments. A quantity measure of research output may well lead to a 'price' in terms of quality and type of publication, being paid by the academic community. Our evidence suggests that this is certainly the case for the Humanities (see especially Chapter 8). Similar problems are encountered when using books as a measure of 'research output'; they too vary in length and quality. It is possible that 'weights' could be attached to articles (and books) of different quality, but this would require a consensus of opinion on an appropriate weighting system and necessitates a subjective judgement of each paper's relative quality. This would be both time-consuming and beset by similar problems to measures of research output based on peer review.

It is important that some weighting system to reflect relative quality should be devised if a publications count is to become the standard measure of research output. The danger of not doing so is that it may lead to a lowering in the quality of research if researchers begin to sacrifice quality for quantity in order to boost their research rating. As our evidence shows this may well be encouraged by

departmental heads who are keen to count as many of their staff as possible as 'research active' so as to maximise income from the RAE. The sensitivity of ranking to the weights attached to different types of publication has been clearly demonstrated by Johnes (1990).

Johnes and Taylor also point out further problems arising from the use of a publications count to measure research output. One is a consequence of the time lag between completing a piece of research and its publication. If the author moves to a different institution, the question arises as to whether the publication should be credited to the institution where the research was done or the researcher's current institution. Different views may arise if the RAE is seen as a measure of *potential*, in which case use present institution, or *past* activity, in which case use previous institution. Certainly, using present institution would appear to involve some injustice to the previous institution which not only paid the academic's salary, but also provided the infrastructure for their research. This raises another issue in that if the new institution does not have an appropriate research infrastructure then the new recruit may not be able to produce research of the same quality and quantity as previously and therefore past publications are not a very useful measure of likely future output, or potential.

Multiple-authored papers also pose a problem. In the absence of any firm evidence of relative contributions to a paper, the credit for a publication with more than one author should be divided equally between each author. A further point to be made is that as a result of the development of RAEs in which publications are central a result may be an increase in the number of journals and the submission of papers in general. Unless there is a commensurate increase in the availability of referees and/or their time spent on refereeing the quality of refereeing may suffer with a diminution in the quality of papers published in any given journal.

Research income: Publications or citations necessarily require a time lag over which to perform the count, whereas the funders of research normally want a more up-to-date picture of the research output of departments. Measures of research income appear to provide a picture of current research activity, though this may not be very accurate in those cases where a research programme is being funded over a number of years. A further attraction to the funding council of using research income is that the data are readily available at both university and cost centre level. However, the obvious problem of using research income data as a measure of research output is that it is an input into, not an output of, the research production process. The receipt of a grant indicates nothing about the quality or even quantity of research produced from the input. Moreover, fields of research where grants are in short supply are disadvantaged by such a measure, hence the constant complaints of humanities staff who, until the new research council is established, that their research is neither properly supported and disadvantaged in any RAE that uses research income in its assessment. An alternative view is that research grants and contracts can be used to reflect the market value of the research being undertaken since they are awarded for a specific package of research, proposed and approved at the outset. But it is still merely a measure of input.

Linke (1991), however, has argued differently claiming that research grants are a valid measure:

"Because the grants provide necessary funding to conduct particular research projects, they are in one sense a measure of input or effort, and within fields requiring similar resources they also provide a measure of the relative scale of activity, or process. And for competitive grants in particular, ... they also signify successful peer assessment of prior research productivity". (p93).

This does not meet the arguments above, for all that Linke is claiming is that it is sufficient to measure research (output) by inputs, processes and peer review, but not by output.

Citations: Another measure of research performance, though not one apparently used in the RAE, is the use of a citation index. If your peers are citing your research then this will reflect the quality of the research. However, there are many well documented doubts about this method of measuring research, possibly the reason it has not, so far as is known, been used by research assessment panels. One reason for not using citations is the reason why an author is cited. Their work may be cited as examples of flawed research practice, rather than the reverse. There are also differences in the citation practices between subjects and authors and this may result in serious bias in the results of using citations to assess the value of research. There is a further problem that it may take time before peers become aware of new research, particularly if published in an obscure journal. This would be of particular significance for the RAE, which takes place approximately every four years, since it may mean that by the time an author's work is making an impact and being cited will be too late for inclusion in the RAE. Further problems may arise if authors deliberately ignore other works in their field, or/and, cite their own work excessively. Citation clubs may develop in which a group of academics agree to cite each other, whether appropriate or not, so that their citation index is improved. If an author is working in an obscure, or newly developing, area they will be disadvantaged compared to authors working in well established fields with many outlets for publication and citation. There is the well known problem of jointly authored works of only counting the first author in an index. The discussion above suggests that before a citation index is used the biases that may result from it, including its possible effect on authors' practices need to be addressed.

In addition to the problems inherent to the evaluation methods discussed above, there is the failure in the research exercise to take account of the differences in the characteristics of the universities themselves.

"A number of factors could potentially affect a university's research output. The statistical analysis undertaken in this chapter indicates that a university's research output is significantly related to four main factors: its student/staff ratio; the resources devoted to research (e.g. expenditure on research or the number of 'research only' staff relative to all academic staff); being located on the geographical periphery of the UK; and whether or not a university is an ex-CAT. In addition, a significant 'Oxbridge' effect was found. The research performance of Oxford and Cambridge was exceptional even when input factors were taken into consideration.

Specifically the UFC rating which each university could have *expected* (given its particular array of inputs) was computed and compared with the actual UFC rating received. The resulting variable was only weakly correlated with the UFC's research rating. *It is therefore vitally important to take input variations into consideration when evaluating research output.*"

(Johnes & Taylor, p170)

The concern of Johnes and Taylor is clearly about value added which will be inadequately reflected in the research exercise if output measures are not standardised for input differences. However, there is a problem in adjusting results for the Oxbridge effect or being an Ex-Cat because these effects may result from the relevant academic communities being better/less able to undertake worthwhile/less worthwhile research. Therefore to adjust for these effects may reduce the real differences in research performance. Moreover, in the Johnes and Taylor exercise, even when their standardised measure is used, 40 per cent of the variation in universities research rating remains unexplained.

One final point concerns the objectives of the research exercise and whether they have been achieved. The UFC intended resources to be shifted within universities from lower to higher rated cost centres. However, there is some evidence that this did not occur. To quote from some earlier research undertaken by the author:

"At one institution we were told that 'It is better for a big department/cost centre to go up one rating than for a small department to go up two'. In order to achieve an increase in research income the same institution combined two departments, a small 'outstanding department' and a large 'below average' department, which resulted in an overall departmental rating of four. The net result was that by merely combining departments, no other changes taking place, the income from the research exercise was substantially increased".

(Mace, 1993, p18).

The funding councils have shown a willingness to evaluate their RAEs and have certainly been prepared to revise the methods employed. However, the exercise is still the subject of considerable criticism including criticism of the "improvements" that the funding councils have made in response to earlier criticism. An example of this is that the 1992 exercise was criticised for being too concerned with the quantity of publications rather than with their quality. In the 1996 exercise only four publications were submitted. However, it has been argued that research that gives rise to numerous publications, often the case in engineering and science, will not receive full credit if only four of the publications are counted in the RAE.

Having considered in more general terms the use of PIs to evaluate university performance it is of interest to examine the response of academics to the assessment of individual subjects. This issue we address in the next chapter.

Footnotes to Chapter 3

Footnote 1

1. The criteria for assessing research quality had not been made clear to universities.
2. The identity of the assessors was confidential.
3. The ultimate rankings appeared to be strongly influenced by the ability of universities to attract research grants, particularly from the research councils (thus favouring large departments).
4. There was insufficient consultation with professional bodies about the appropriate methods of assessment to be used.
5. Different assessment standards were used for different subjects.
6. Evaluation of research on the basis of UGC cost centres/university departments had not allowed proper assessment of the work of interdisciplinary research groups and of joint departments.
7. The descriptive terminology in announcing the ratings was confusing: 'below average' had been understood to imply a low absolute standard.
8. The exercise, being retrospective, had taken little account of work in progress and research potential.
9. There had been no appeals mechanism against particular ratings.

(HEFCE, 1993, p1)

Footnote 2

1. Around 70 advisory groups and panels were set up involving 300 members and covering 152 subject units of assessment. In addition about 100 outside advisers were consulted in confidence.
2. Each advisory group or panel was provided with information obtained from each institution describing the research output in each identifiable subject

area over the period 1984-88 inclusive. This included a brief description of each department's research accomplishments and future plans as well as a numerical summary of publications and research reports. In addition, up to two publications were listed for each full-time member of the academic staff in post during 1984-88.

3. The advisory groups and panels were then asked to rate each department on a five-point scale common to all subject areas. The ratings of different subjects were intended to be directly comparable and this was to be achieved by using the concept of 'attainable levels of excellence' in each subject area. In effect, this meant that research output was compared against an international standard.

Chapter 4: The RAE and Individual Disciplines

Introduction

So far we have considered general criticisms of the RAE. In a number of cases criticism has focused on the treatment of a particular discipline, and it is quite possible that more general conclusions about the validity of the whole RAE might stem from criticism that is based on an individual panel's work. We will describe and comment on four examples of discipline based critiques from Psychology, Geography, Chemistry and Economics.

Psychology

David Marks' paper in the July 1995 issue of *The Psychologist* provides an example from Psychology. Marks begins by reiterating the general criticism made of peer review, whether the peer review is based on journals, grants or merely impressionistic. According to Marks "in spite of the fairly momentous implications of RAEs for the future funding of academic disciplines, few precautions appear to have been taken to insulate panels' decisions from well-known biasing factors in human judgement" (p315) and this despite earlier criticisms of RAEs, for example by Gillett (1989). Marks then reports the results of his own analysis of RAE data. Using 17 variables in stepwise forward regression Marks determines which variables best predicted research rating by the Psychology Panel. To quote his results in full

"This analysis reveals that five variables explained 82 per cent of the variance in the Psychology Panel's ratings of departments in the 1992 RAE. Only two of the five, the average number of academic journal articles per staff member and the proportion of active staff, were measures of research output. The remaining variables are input measures, two provided as background information to the Panel (number of C and D staff, and ABRC

income) and one, the availability of an animal laboratory, not one of the officially provided indicators but nevertheless appearing to have significant influence on the Panel's quality ratings. Reassuringly, geographical location (north vs south) and university status ('older' vs 'newer') were not significant predictors of ratings. However, proportion of active staff was highly correlated with ratings (.581, $df=63$, $p<.001$) and played a significant role in determining funding" (p317).

Oddly "Publication output in the form of authored and edited books, refereed conference papers, book reviews, and other kinds of publication had no impact on ratings" (p317). He goes on to prophesy that what will happen as a consequence "the profile of academic publishing will shift towards an even more severe manifestation of the 'publish or perish' syndrome already endemic among the academic population" (p317).

Marks proceeds to explore the "biases" in favour of departments with animal laboratories, towards big departments and against such areas as health psychology. He considers that in part the bias arises from the composition of the Psychology Panel. Six of its seven members come from big departments with animal laboratories. This may well be a feature of other panels judgements - the composition of the panel predisposes them to certain types of judgements. This, however, may be to some extent unavoidable. What is not is "the confusion that existed in the 1992 RAE between input and output measures" (p318). Marks proposes "Panels should be instructed to base their ratings upon the quality of research outputs and consider the cost-effectiveness of departments' research using measures of output per unit of input as previously suggested by Gillett (1987a, 1987b) and Colman *et al.*, (1992) (p318). However to do this evaluation of research effectively may impose, as Marks concedes, an intolerably heavy burden on panel members.

Moreover, although Marks' criticisms have some validity they may be overstated. It is possible that good research is correlated with publishing in refereed journals,

having large numbers of research active staff in departments and that because of their successful research activity that they also attract research funds. Similarly large and expensive animal laboratories may not be funded unless they are associated with what is perceived as good research. However, these are all speculative claims, to some extent recognised in Professor Baddeley's response to Marks in the same journal where he comments "correlation does not imply causation" (and) "There is a severe limit to the extent to which post hoc analysis can give clear and credible answers to causal questions" (p320). This is a worrying comment from a member of the RA panel. Of even more concern perhaps are two further comments in his response: "We were given a varied and *imperfect* set of indicators" p319 and "Clearly any attempt to come up with a fair assessment of research quality will *provide at best rough justice* (p320). Members of the academic community whose financial support rests in large part on the results of the RAE may well consider they have a right to more than "rough justice".

Geography

Marks' response is very much focused on the Psychology Panel's work and its effect on Psychology departments' meetings. A general critique of the RAE, from the point of view of one discipline Geography, is that of Jenkins (1995). Using, implicitly, a rational behaviour model Jenkins (1995, p4) argues that

"individuals, departments and institutions have far more powerful economic reasons to push research way up the agenda! Individuals are more likely to perceive that their promotion/career prospects are likely to be progressed through being in a high ranking research department. While as rational economic maximisers or rather "loss minimisers", individuals, departments and institutions will recognise that "since the marginal financial rewards for improved research ranking are so much higher than extra funds which can be obtained from improved teaching, all universities will tend to concentrate resources on improving their research, which will defeat the objective of concentrating research funding, at the same time to *encourage a relative neglect of teaching*" (Williams, 1994, p2) (Jenkins emphasis)".

Jenkins examines the impact on teaching of the RAE and teaching quality assessment (TQA) exercises. A consequence, Jenkins maintains, is that much more teaching is being undertaken by postgraduate and part timers and in making appointments and promotions much more emphasis is "placed on research productivity and potential vis-a-vis teaching". The TQA has had a relatively limited impact on behaviour, resulting in relatively minor changes such as compulsory student questionnaires and course booklets. The reason for this is given by one of the interviewees in his sample (not provided).

"The teaching exercise has made no impact yet. So far we haven't been told what the rewards or penalties are likely to be for success or failure in this exercise...By contrast it was clear from the start that there would be substantial rewards and penalties in the research exercise.

The next research review...is still heavily stressed, as is the consequence of a slip in grading - a drop by one place may mean the loss of...jobs. The threat is explicit...it is only when the quality assessment for teaching determines funding and recruitment that it will be accorded appropriate priority. By then it is maybe too late" (p7).

Jenkins not only reports on the emphasis on research but also that

"The RAE has significantly shaped what "counts" as scholarly activity and in particular is deterring staff from researching and writing for discipline-based pedagogic journals and producing teaching related materials, in particular student textbooks and information technology-based teaching materials (p7).

The impact of the rules and funding arrangements of the RAE on the production of these materials is now becoming a matter of public record. In late 1993 I met four established geography editors from leading publishing companies which publish in all disciplines. The edited transcript (Davey *et al.*, 1995) makes clear that staff are being deterred from writing student textbooks (p8) and the general picture for teaching is gloomy" (p10)

and for research he argues that we are heading (if not there already) in the US higher education direction

"in US higher education, particular the widespread recognition in the academic community that the faculty reward system has promoted a narrow view of scholarship, i.e. refereed original research and devalued other forms of scholarly activity, in particular undergraduate teaching" (p11).

As with Marks' critique Jenkins' method may be flawed in so far as it is based on a "pilot study of views" (we are not told how many staff, who they were, or how they were selected) and "excerpts from a discussion with leading publishers" (p6). Again "sampling" details are omitted. Jenkins does concede "possible bias in this study" and urges readers "to interrogate it from their own experience and to follow up this study by researching other disciplines' experience" (p6).

Chemistry

Professor Waigh, though specifically concerned with the implications of the RAE for chemistry is, as with the previous review of the RAE, also concerned with the overall impact of the Exercise on universities and their staff and on research generally. He contends that

“With the aid of a few senior academics, the Universities Funding Council (now the Higher Education Funding Councils) devised and implemented the Research Assessment Exercise (RAE) to bring about the R, T, X division by evolution. The research performance of every department is ranked, and the top-ranking departments get more money, on a sliding scale. *The entirely predictable effect is that the strong get stronger and the weak get weaker:* (my italics) a department finds itself either on an 'up' escalator which leads to salvation, or a 'down' escalator which leads, in the new 'caste' system, to the status of 'untouchable' (p541)”.

As Waigh points out the effect of this policy, if it is successful, is to create an underclass of academics who because of shortage of time, increased teaching (and, presumably, administrative responsibilities) and lack of resources in terms of both equipment and support staff are effectively disbarred from research. He claims that

“For all except a minority of academics, research is being discouraged - taking away one of the major attractions of a university post. At the same time, staff-student ratios are getting worse and teaching loads are rising. There has also been talk of teaching throughout the year, in a search for greater efficiency” (p541).

The whole policy he claims is likely to result in a need to spend more money to attract staff to a position in universities that no longer provides the same attractive conditions of service as erstwhile and reduces the quality of teaching to such an extent that "very few students have any concept of 'scholarship' or of learning for its own sake". Whether these are the results of government policy has still to be empirically tested. He also fails to recognise that some of these effects may be precisely what lies behind the changes in government policy towards universities. Perhaps a more critical assertion made by Waigh concerns the effect of the policies on the nature of the research process itself:

"Concentrating research effort into relatively few centres might make some sense if the effect was catalytic. In practice, highly-focused research institutes do not work very well, for a variety of human reasons. At best, they lead to a consensus view of the most significant areas for research, which loses freshness and originality. At worst, they provide stressful, secretive, competitive environments that turn into dogfights. New discoveries are often not predictable: the more competent researchers there are, spread over the greatest number of departments, the better".

If this assertion is correct then there may be long term, if not more immediate, damage to research in the UK. He also alludes to the effect that the policy may have on the cost of research: he contends that it will rise because under the RAE the emphasis is on getting grants because

"If a researcher happens to be doing good but cheap research he or she will not be praised for effectiveness, but castigated for failing to attract large sums of money. The frantic grantsmanship that ensues is a waste of everybody's time, since there is only a certain amount of money in the pot, and perfectly good research programmes may be abandoned because they are cheap!" (p4542).

Not only is there the problem of getting a large grant to achieve recognition in the RAE there is the further question of the quality of academics' publications. He believes that the panel members will be unable to read all the publications listed in the university returns (a point made by Marks with respect to Psychology) but also that quality will be measured by use of a citation index. We have discussed these

problems earlier but the specific point made by Waigh is how it will bias research ratings in Chemistry

“A problem with this approach is that some areas, particularly biochemistry, are trendy and busy and produce high impact factors. High-quality publications in mainstream chemistry, such as the *Journal of the Chemistry Society*, suffer badly in comparison. Small, specialist research areas suffer from very low impact factors, irrespective of the quality of the research” (p472)

This apparently adverse impact for mainstream chemistry contrasts sharply with the claimed effect on mainstream economics discussed in the next section. There it is asserted by the authors assessing the effect of the RAE that non-mainstream economics is adversely affected whereas mainstream economics is very favourably treated. It would appear that if these evaluations are correct the same procedures are producing very different effects in different disciplines.

Waigh goes on to consider the impact of all research of an individual counting solely towards the institution in which they are employed on 31 March 1986. He considers that the development of "a transfer market reminiscent of the football league" will effectively concentrate the 'stars' in the richer departments. In order to enhance efficiency he proposes that research funding should be according to cost-effectiveness.

“It would be possible to calculate a cost per publication, and low figures should be a cause for celebration”.

One problem not explored by Waigh is how the 'value' of a publication is to be measured.

In order to prevent staff being abandoned in low rated departments with high teaching loads he proposes an alternative way for the HEFCE to fund research "we should fund people rather than departments, to do research". However, there

remains the problem of the criteria to be used to select these people. It would not be enough to do it by publications given the problems he has already indicated.

Economics

It is interesting to note that despite the difference in subject the comments on the RAE focused on similar concerns: the inadequacy of peer review, the apparent bias towards certain large departments and particular types of research activity, and the development of an academic "underclass". The final subject review of the effects of the RAE makes many similar observations, but it differs from the previous three in two important respects: it is based on a much more systematic and more substantial piece of research and it aims to test an explicit hypothesis.

In the words of the authors, Harley and Lee:

“This paper aims to report the results of empirical research designed to expose the impact of the Research Assessment Exercise (RAE) on the work and employment of academic economists in both the old and new universities in the UK. The central hypothesis of the research is that the existence of lists of core journals which are believed to count most in the ranking exercise poses a serious risk to academic diversity within the economics profession.⁽¹⁾ The core journals have tended to select for publication predominantly work which might be defined as mainstream economics because it is located within a well-defined neo-classical core. There is therefore considerable pressure on departments which want to maintain or improve their research rankings to appoint mainstream rather than non-mainstream economists and upon individuals within those departments to publish more where it is believed to count most”.

(Harley, Lee 1996, p1)

Their definition of MS and NMS is

“We included in our definition those working within a Marxist, Post-Keynesian, Evolutionary or Sraffian framework and indicated as much in a covering letter which also stated our research interest” (p3).

Whilst correctly noting that research quality and productivity has always been central to the academic process, the authors' concern is that the context in which

research is undertaken has changed as a result of the recent RAEs that it is now harnessed to managerial ends through the HEFC RAE' and this managerialism has worked to the detriment of Non-Mainstream Economics (NMS) research. This managerialism has adversely affected work and prospects in non-MS fields and the bias is the result of the peer review method of assessing research. The paper does not explore many of the concerns with peer review that we examined but focuses instead on the fact that the peers were all MS economists who Harley and Lee assert only used MS journals in their research assessment with the consequence that NMS academics and their work were undervalued. This paper is highly relevant to our own research and thus warrants a more detailed presentation and discussion than the papers we considered previously.

Before presenting and discussing the findings their sampling method deserves comment.

“A questionnaire was sent to all those economists who could be identified as having an interest in non-mainstream economics from attendance at non-mainstream conferences and study groups, contributions and subscriptions to non-mainstream journals and membership of non-mainstream economic associations.

Questionnaires were then sent to all other economists who could be identified as working in those departments from which we had non-mainstream replies” (p2).

We are not informed of the response rate, though reading of the Appendix suggests it may have been 38 per cent. As they admit, given the sampling procedure, it certainly over-represents non-mainstream economists. In addition, one might cavil at their definition of non-MS economists, essentially those not working within the neo-classical tradition. All MS economists are grouped together as though they were homogeneous and thus differentiation within the group is discounted. It may be that neoclassical economists should themselves have been further subdivided since there is little doubt that work within this paradigm is not equally valued either by publishers or by peers. Within the MS group one need only peruse the elite

journals to see the greater value that appears to be afforded to mathematical papers as opposed to papers, for example, in development economics. Indeed, their own quote from Whitley indicates that within MS economics a significant division exists.

"Research involving statistical data and empirical indicators seems to be separated from theoretical model-building activities in economics and have a lower intellectual prestige ... Thus theoreticians can obtain high reputations by producing highly abstract and general models of ideal worlds without considering how they are related to economic phenomena in real worlds: their work is partitioned from empirical economic studies, and they do not need to demonstrate any systematic connection between them".

(Whitley, 1986, p192.)

Harley and Lee first consider how criteria for recruitment of economists has changed.

"Fifty-three percent of economists who had been working in the old universities for three or more years and sixty-four per cent of those in the new believed that there had been change. In the old universities, the most commonly stated single category of change was a greater emphasis placed on publications (22%). However, the second largest category of response (17%) (actually 19.9% in their table) mentioned explicitly a greater emphasis on mainstream research or publications; 15 per cent said there was a greater emphasis on mathematical and technical skills and a further 13 per cent that recruitment policy was specifically targeting those with a record or publishing in core journals, categories which we have taken together to imply a paradigm-shift" (p5).

Their results are summarised in table 1 below.

Table 1 Economists Perceptions of Changes in Recruitment Policy

	Old Universities		New Universities	
	n	%	n	%
More publications	35	21.7	15	22.4
More on research	21	13.0	26	38.8
change to ms explicit	32	19.9	4	6.0
greater technical skills	24	14.9	4	6.0
emphasis core journals	21	13.0	2	3.0
short-termism	6	3.7	0	0.0
other	22	13.7	16	23.9
	n=161	100.0%	n=67	100.0%

The paper also reports on the respondents who considered that there had been no change in recruitment policy, approximately 45 and 41 per cent respectively of MS and non-MS economists. But in the Old universities 31.6 per cent said that quality of research had always been important in recruitment, whereas only 14.9 per cent of respondents in the New universities mentioned quality of research. The other important difference between Old and New universities was in the importance they attached to teaching when recruiting staff: 17.3 per cent in the Old contrasting with 38.3 per cent in the New universities.

The authors next examine the impact of the RAE on departmental work. Recruitment policy is again examined here, but the emphasis is on the differences between non-MS and MS economists as to how policy had changed as well as reporting differences between New and Old universities. As can be seen from the Table below there are significant differences between the university types in the perceived impact on departmental work.

Table 2.1 Impact of RAE on Departmental Work (Q.6)

	Old Universities		New Universities	
	n	%	n	%
more pressure to publish	34	13.1	16	17.2
to publish diamond/core/ms	67	25.8	4	4.3
pressure to publish more	42	16.2	2	2.2
refereed journals	26	10.0	9	9.7
work more ms/tech	35	13.5	8	8.6
greater division of labour	3	1.2	18	19.4
More research targeted	31	11.9	31	33.3
teaching suffers	18	6.9	3	3.2
other	4	1.5	2	2.2
	n=260	100.0%	n=93	100.0%

The 19% in the New Universities reporting greater division of labour reinforces the impression of a two tier system developing within institutions themselves. The paper makes considerable use of quotes from respondents and we include some in the extended footnote 1, they reinforce some of the evidence that was collected in our own study.

The effects on recruitment policy were seen to be greater for non-MS (66%) as compared to MS economists (29%) in the old universities and respectively 43% compared to 26% in the new universities.

“Out of the 63 institutions from which our original sample of non-mainstream economists came only seventeen could be definitely identified as having recruited non-mainstream economists in the last three years and the majority of these were in the new universities. Even high-ranking departments in the old university sector strong enough to support some non-mainstream and ostensibly proud of their heterodoxy could not boast a single non-mainstream appointment during that period”. (p24).

The concern that universities shared for achieving a high research ranking in the RAE through appropriate recruitment practices is further supported by advertisements appearing in the academic press.

“Out of some 20 job specifications which the researchers obtained by sending for details of posts advertised in the educational press, only three did not specify an area of interest within the mainstream or make reference to ranking in the last research assessment exercise”. (p25).

Not only do the authors report changes in departmental activities and in individuals' work, but in exploring the effect of the RAE they found, as we did in one of our institutions, a divide growing between research active staff and other staff. A divide that will be exacerbated as research staff have their teaching loads lightened with commensurate increases in the load on other staff. This divide is much greater with New than Old universities.

Further non-MS economists were much more likely to perceive a change in departmental policy, 85 per cent of NMS were more likely to perceive a change, as opposed to 61 per cent for MS economists. The authors report considerable hostility by both groups towards the RAE which stemmed from 'what was perceived to be interference in the academics' traditional freedom to set their own research agenda, to produce the knowledge they considered to be important and to disseminate it in the way that they saw fit' (p14). An example of this view is reflected in the following quotes given in the footnote below.

Harvey and Lee report on changes in the diversity of work. No less than 50% of economists in the new universities and 41% in the old reported that they had changed the direction of their work in some way to fit in with the demands of the RAE and, perhaps not surprisingly, the effect was greater for Non-MS (51%) as opposed to MS economists (36%). A further group felt under pressure to change,

but has yet to do so: 28% and 19% respectively for Non and MS respondents.

Some examples of economists views are reflected in the quotes below:

“I have been distracted from writing a second book to churning out papers for journals

plans for further editions of books dropped. Plan for a book based on major research project split into series of articles for submission

I've switched to a mainstream topic because even with 31 publications (including two books) I haven't been promoted

now set objective of publishing in the mainstream for benefit of departmental rating and my promotion prospects”. (p16)

As the quotes clearly indicate the pressure to change the orientation of work has affected departmental/university policy towards promotion, which reinforces the general effect of the RAE. Whether this is intended or not by the HEFCE is not explored in the paper.

The detrimental pressure exerted by the RAE, at least in the view of some of their respondents, is further illustrated in quotes given in footnote 2. Notable too is the effect this policy has on the willingness of academics to remain in economics departments. Some, it appears, are contemplating moving to other departments, business studies for example, to pursue their academic interests which they perceive as threatened in their current departments. The effect on individual work practices appears greater on the young and untenured economists who feel compelled to "play the game" until their appointment is confirmed. (See footnote 3). The apparent pressure to conform to what the authors take to be orthodoxy appeared to be reinforced by the relationship found between RAE rating and the pressure to change the nature of academic work.

Table 5.1 Change in own work (Q.7) by departmental ranking in old universities

Ranking in the 1992 Research Assessment Exercise				
change in own work	2	3	4	5
yes	59.1	47.8	34.8	29.5
no	22.7	32.2	37.7	52.6
felt pressure	18.2	20.0	27.6	18.0
	n=22	n=90	n=69	n=78

However, this is not an altogether surprising finding since so much money and prestige is attached to higher RAE ratings. The important point is the direction in which the respondents are being compelled to move towards MS research that we described earlier.

The major conclusions of Harley and Lee's paper are:

1. Non-MS work is seen as threatened and with it diversity in economics teaching and research.
2. Economists, it is claimed are being pressurised by peers, departments and institutions towards more short term research and to publish it in what are considered to be the journals which count most in the ranking exercise.
3. Doubts are expressed about peer group review. The authors contrast the effect of different forms of peer review and express doubts as to the competence of the RAE panel to assess all areas of economics work.

4. In the long term the authors conclude that NMS as an area of research will shrink and students will be ignorant of this area. Potential intellectual challenge essential for developing knowledge may well be weakened.

If the claimed consequences for economics, as described in Harvey and Lee, are also true for other disciplines then the nature of a university may well change. Managerialism and peer review may together have reduced the range and focus of creative research and undermined academic autonomy. The restrictions may not necessarily either be in the interest of government policy (to support wealth creating research) nor of the individual discipline. These are matters which we consider at length when we present our findings.

We have presented Harley and Lee's findings at length because much of their evidence concerns our own research and evidence. However, this does not imply unreserved acceptance of their conclusions for a number of reasons. First, the authors' hypothesis of the MS bias is undermined by note 2 on p29 of their paper. The note claims that their economics department was a leading non-MS department, but despite the biases they claim for MS in the RAE it was "the only one (department) in the new university sector to have scored a 3 in the last RAE". This department outranked many MS departments in the New and Old universities and this despite the claim by the authors that the RAE panel was staffed by MS orientated academics chiefly concerned with publications record in the so-called "Diamond list" (see footnote 4) It is unfortunate that this apparent paradox between hypothesis and evidence is not mentioned.

Other criticisms may also be made of their study. Their sample of economists, as they admit, was biased towards NMS economists whose views may not reflect those of the majority of economists. However, as it is this group that Harley and Lee see as being most affected by the RAE this bias may have some justification.

The extent of the bias is unfortunately not explored which means we have no way of comparing the distribution of MS and NMS economists in the sample with the distribution in the population and thus knowing the extent of the bias. We have already alluded to the way in which the economists were grouped: either in the MS or NMS group. Although this would make no difference to the results in the aggregate, the grouping may disguise important differences in the perceptions of the effect of the RAE on subsets within the groups. It is unfortunate also that the analysis of the data did not include some investigation of the interaction, if any, between the NMS and MS sample on the one hand and the New and Old universities on the other.

Despite these caveats which certainly cast some doubt as to whether the authors have confirmed their central hypothesis, the results do suggest that economists perceive the RAE, the principal PI used to assess universities, to have had a very significant effect on research, publications, recruitment and departmental and institutional policy. These are questions which are central to this research and we will, where appropriate, compare our results with those made by Harley and Lee and the other discipline-based reviews of the RAE discussed earlier. Although our research is concerned with more than the effect of the RAE, many would argue that it is the introduction of assessment of research through research panels and the huge sums of money attached to either receiving a low or high ranking from that PI that has had the greatest impact on university behaviour.

We have carried out a detailed review of PI which we have supplemented with what could be called a series of case studies embracing the humanities, social sciences and sciences. This review has a crucial bearing on our research, to be reviewed in the following chapter. We have noted the self criticism of HEFCE and their attempt to accommodate them in our criticisms in subsequent RAEs. Despite such accommodation major criticisms remain, in particular the literature highlights

continually the problems inherent in peer review, using publications and research income.

We shall be concerned in part to see whether our intensive case study of two contrasting universities bears out, extends or challenges the serious misgivings of the RAE reported in this chapter.

Our next chapter will outline our research design, methodology and its legitimacy.

Footnotes to Chapter 4

Footnote 1

Awareness of (supposed!) criteria for RAE permeates all research and publication activities (author's bracket).

Publication of books discouraged, only top journals valued. Teaching performance ignored.

Pressure to publish regardless of intrinsic worth. The more articles the better, the more mathematical the better.

Focus is now upon statistically competent, young, cheap personnel with the potential to churn out ephemeral research findings. No concern with originality and long term potential. It has become frenetic and trivialised.

More mainstream and "safe" research. Also a more short term view point - less emphasis on scholarship

Footnote 2

I do not regard it as desirable that academics should be required to publish - only that they should be constantly examining their subjects with a view to rejecting and exposing falsity, and publishing only when they have something to say and they are reasonably certain they are right. Mass publication leads to chaos and disorder in the state of knowledge.

I am seriously considering moving out of an economics department into a more hospitable environment in another part of the university. I shall not change the content of my work.

Footnote 3

I personally have been interviewed at other universities where it has been clear that publishing in core journals is the criteria

in my inquiries regarding other posts at older universities I have been asked about research interests and the RAE and journals have been signalled. At a selection committee of a large older university I was recently asked directly which journals I aim to publish in over the coming 2 years.

I am a Marxist, but since I am on probation until Jan I have been forced to do mostly mainstream research or else I know I wouldn't be made permanent

on advice from a present colleague, when I applied for my current post, I stressed my ability to teach mainstream micro. I also told them that my research interest was general equilibrium. Subsequently I "came out" and pointed out my research as Marxist equilibrium. I doubt I would have got my present post had I not pursued this little deception. (p21/22).

Footnote 4

The Diamond list of 27 economics journals was compiled by Professor Diamond of the USA in 1988. The list was drawn up on the basis of citations.

Chapter 5: Research Questions, Design And Method

Introduction

The research method should be dictated by the research question(s) and objectives of the research. We have earlier described our research questions as:

- (i) How have universities responded to changed methods of funding with respect to patterns of teaching and research activities.
- (ii) If there are changes to universities are these changes consistent with the orientations given by the Government for the introduction of these new methods of funding universities?
- (iii) Has the type of research undertaken changed?
- (iv) Is there a trade off between teaching, research and administration?

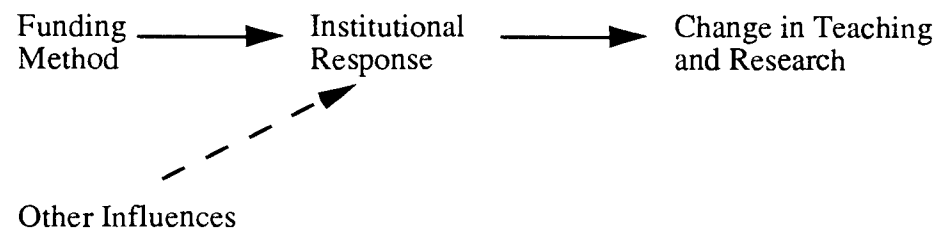
And we have described our objectives as the following:

- (a) The overall objective of this research is to examine the effect of changed funding methods, particularly the introduction of the RAE, on teaching and research in the old universities. More specifically we intend to:
 - (b) examine the response with respect to teaching and research, of institutions, their policies and staff to changes in funding methods;
 - (c) discover whether there are differences between cost centres and between universities. And, if so, to explore the reasons for these differences;

- (d) discover whether there have been changes in the amount and type of research and teaching being undertaken by academics;
- (e) feed the results back into theories of institutional finance and to policy making at the macro and the institutional level.

Clearly, in order to answer our research questions we require information about changes, if any, in patterns of research and teaching in universities and we have to devise a means for establishing the causes of the changes. Diagrammatically our question is whether the relationship is as in Figure 2. Note the broken arrow from other influences. The importance of these other influences relative to funding change is one question we need to address.

Figure 2



The changes in the method of funding have been described earlier. In this chapter we have to establish a means of determining institutional responses to the change in funding method and the effect that this response has had on teaching and research. One possible method to measure changes in teaching output is to examine published statistics or changes in degree results, numbers of university students and staffing. One way to measure changes in research output could be to examine the research selectivity results to see how they have changed for universities since the change in funding method of 1986. We evaluate these statistical indicators in chapter 3 and 4 and we found the method flawed. However, though flawed, they do provide some

quantitative indicators of university output against which other indicators of output can be compared.

If published sources are of doubtful validity for our purposes we are left with using unpublished material (internal institutional documents and arrangements) or/and generating our own data. Our review of internal documentation from selected institutions and interviews with senior management personnel revealed that certain internal documents would help us to answer some of our research questions -- statements on resource allocation policies and the reason for their change being one example. However, internal documents did not address such questions as to how time spent on teaching and research has changed or whether the quality and type of teaching and type of research had changed. Thus it is necessary that we generate our own data.

Given the constraints of time and money it would clearly be impossible to include the whole population of universities in the empirical work. We therefore chose a small case study approach. Two questions need to be answered before the sample is selected and the first again concerns the time and resources available. The number of universities that can be included in the sample is determined by the amount of data to be collected from universities, how it is to be collected, how it is to be analysed and the human and financial resources available. The second question returns us to our research question(s) and whether those demand a certain sample size so that they can be meaningfully answered. For example, the ability to generalise from our results will be significantly related to the range and number of institutions included in our empirical work. A trade off clearly exists between the limited availability of resources and the ability to generalise from the results and say something meaningful for policy and theory. In the event the shortage of resources prevailed and we therefore chose to confine our case studies to two institutions, reflecting contrasting elements of the university spectrum. Although we have

confined our study to two universities we hope to compensate by studying these institutions in some depth. Within these institutions, we will undertake a detailed study of institutional policy and research and teaching activities. Internal documents and interviews with staff are two sources of information and published documents are a further source. To obtain a systematic picture of staff research and teaching activities a large percentage of staff would need to be interviewed. However, as a representative sample of staff in a single university could be in excess of a hundred, individual interviews were clearly not possible. We decided to design a questionnaire and distribute it to a random sample of one in three academic staff.

Having briefly laid out our research method, we will discuss the method in more detail examining in order:

- Sample of institutions;
- Questionnaire design;
- Sample of academic staff to be given questionnaires;
- Sample of staff to be interviewed;
- Institutional statistics and documents;
- Published statistics to be used;
- Issues arising with our method, including the use of the case study approach.

Sample of Institutions

As we have restricted resources to pursue our research we were limited in the number of cases we could consider and therefor decided upon a small scale study. We decided to exclude Scotland because both the funding arrangements and the history of universities is so different from that of England. Similar considerations apply to Ulster where there is the additional problem of the so called, "troubles".

Wales also has different traditions although until 1992 its university was funded in the same way as the English universities.

Within England there are significant differences in history and structure in university institutions. Oxford and Cambridge, for example, are atypical universities. Amongst the other universities there are differences between the Redbrick, Greenfield and ex-CATs. There may also be differences between institutions according to their ranking in the RAEs.

In deciding which institutions to select we were influenced by our central research question: the effect of funding changes on teaching and research. We decided therefore to choose two institutions: one a traditional multi-faculty prestigious university rated high in the RAE and the other an ex-CAT with a more limited range of faculties that was rated low in the RAE. We recognise that this will limit our ability to generalise from our results, but it does, given our limited resources, enable us to examine differences and similarities in response to changes in funding method from two universities with very different characteristics. If they do respond in similar ways to funding changes, such evidence would shed light on our research question concerning the central role of funding in determining university behaviour.

Questionnaire Design

The questionnaire consisted of closed questions with a number of open questions. The closed questions were highly selected to reduce the time needed to complete the questionnaires. It is well established that there is an inverse relationship between length of questionnaires, time needed to complete them and response rate. In addition, we knew that we were going to interview a number of people in the institutions selected and this would give us a further opportunity to explore any additional questions generated by our analysis of the questionnaires. The responses

to the questionnaire could be described by statistical techniques supplemented by the qualitative analysis of the open question. Furthermore, the responses to our questionnaire could be compared to the responses of senior staff we interviewed.

A copy of the questionnaire is provided in Appendix 3 so we will confine our discussion here to a general description and the rationale for its structure. The questionnaire is divided into three sections. The first concerns the characteristics of the respondent: age, sex, year of appointment, seniority and department/cost centre. The reasoning for obtaining this information was so we could see if the findings were in any way systematically related to the individual characteristics of our sample. For example, it may be that the perceptions of changes to teaching and research differed between the humanities, social sciences, engineering and science. Such differences could be investigated in our statistical analysis.

The second set of questions concerned staff perceptions of changes, if any, to their research. Thus staff were asked about changes to time spent on research, changes in quality and type of research and constraints on research activity. Each closed question was then followed by an open question in which the respondent is asked to give the reasons for the changes. The answer to the closed questions will enable us to discover what changes have taken place. The open question will give some indication of whether these changes have taken place in response to either internal management change, teaching or administrative changes or external forces, the RAE, or both.

The third set of questions were designed to elicit similar information, with respect to changes to teaching. We asked staff about changes to their teaching load, how it is distributed between different teaching levels and method, how the quality of teaching has changed. We also asked staff about their perceptions of changes in the

support services at their university and changes, if any, in the quality of student intake.

We offered confidentiality in order to facilitate responses. One consequence of this guarantee was that we could not follow up non respondents and that as a consequence we were unable to check the extent to which our sample may have been biased. However, we have checked the bias with respect to the distribution of staff in institutions.

The distribution and collection of questionnaires was discussed with senior management at both institutions and in both cases they agreed the same method. In both institutions the internal mail system was used for distribution and collection. Respondents were asked to return their questions to a central point from which the researcher could collect them.

Sample of Academic Staff

Two questions arise with respect to the sample of staff to be given questionnaires: how they are to be selected and the number.

We wished to discover, among our other objectives, whether staff perceptions of change were influenced by status, gender, discipline, type of institution. The fact that we needed to have cells large enough for useful statistical testing and to ensure that our sample included staff from all areas of work and of all levels, required a sample in excess of 100. Since this was to be a postal questionnaire and responses to such questionnaires could be as low as 30 percent, we decided that we needed a sample of one in three in one university and one in two staff from the smaller university in our case study.

Sample of Staff to be Interviewed

As the interview schedule makes clear the staff to be interviewed needed to be familiar both with institutional policy and with the reasons for it. This meant that we needed senior staff who were involved in the institutional decision making process. Thus we included in our sample of interviewees pro-vice chancellors or their equivalent. We also required staff who were familiar with the effects of policy at the departmental level. We therefore chose to include in our sample heads of departments which covered the major areas of university work. We chose to interview at least one head of department from each of the following: science, engineering, the humanities and the social sciences. We recognise that there may be significant differences within these categories for example physics may not be affected in the same way as chemistry. One of the biases which may enter the sample is that in order to obviate so far as possible any glaring biases we took advice from senior management as to which heads of department were in the best position to give us the best overall view of the effects of policy and would also know of any significant differences in the effects, if any, on other university departments. We did not have any other alternative for selecting strategic staff.

Interview of Senior Staff

The interviews were designed to provide us with two sets of data: first, whether our research hypothesis of the central importance of funding changes in determining policies with respect to such matters internal allocation procedures, staffing was supported; second, to obtain further insights into the reasons for the responses given by the staff in our questionnaire and to note any differences between these staff and the sample of senior strategic staff. The most appropriate way to garner this sort of data is through a semi-structured interview. This type of interview

facilitates responses to questions that the researcher wants specifically answered and in addition it enables respondents to elaborate as much as they deem appropriate. In doing so they may raise other issues that they consider pertinent. The structure of the questionnaire was as follows: the first set of questions were concerned with exploring the general changes that have occurred to the department/institution and the cause of these changes; the second set of questions was concerned more specifically with the impact of the internal allocation procedures on departmental activity, including policies designed to ensure a high rank in the forthcoming RAE; the third set of questions was concerned with view of our research design and the results from our questionnaire which were made available to the strategic senior staff. A copy of the questionnaire is provided in Appendix 4.

Institutional Statistics and Documents

We were interested in changes to teaching, research and institutional management structure and organisation that had taken place since the change in funding method in 1986. We were guided in our selection of institutional documents by the senior management. Unfortunately, though not perhaps surprisingly, we were denied access to minutes of the decision making committees as they were deemed to be confidential. In the event the documents made available did not provide insights into policy that were not provided in the interviews.

Published Statistics and Other Sources

The CVCP/Funding Council publications on university management and performance provide useful background information. They were used in advance of our meetings with staff at the universities in our sample. The results of the RAEs were also consulted so that we knew the rankings of the departments/cost centres

whose heads we interviewed and also to provide a general picture of the institution itself. For further background information about the institutions we also made use of the USSR/Higher Education Statistical Agency databases. Because of the nature of the study we did not use other published statistics as they might not relate to the questions motivating this research.

Issues Arising in the Methodology

Choice of Interviewees

We have already mentioned the possible bias in our sample of interviewees because of their selection in consultation with our senior management contact at the institution. However, as we pointed out we did ask and get representatives from the major areas of work at the institutions. We could not have interviewed more staff because of the limited resources at our disposal. (As it was the arrangements and interviews at each of the institutions took more than three weeks). A further potential source of bias was the fact that a number in our sample had dual roles as members of senior management committees and as heads or ex-heads of departments. We were interested in their views from both perspectives and any possible conflict of interest between the roles. In the event we asked those to whom this problem may apply to elaborate where conflict may arise and in the interviews themselves we highlighted those questions where we thought there may be a conflict to discover whether this was the case or not.

Bias in Interviews

Apart from the possible source of bias mentioned above two others may arise. First, there is the fact that some of those interviewed may have also filled in the questionnaire and their perceptions of the effects on teaching and research of

funding changes may have been influenced in the process. The fact that most of the interviews took place more than 18 months after the questionnaires had been returned certainly reduces the potential for this source of bias. In addition the questionnaires themselves do not mention funding changes; it is the respondent who might mention it as a possible cause of their changed behaviour. A second source of bias may stem from the biased reporting of the interview by the researcher. The dangers of this would have been reduced had the interviews been taped, but this proposal had been rejected in the interests of encouraging the free expression of views. Certainly some of those interviewed did express the view that some of what they said should be treated as 'off the record' or be unattributable. Certainly, the quotes and the interviews themselves indicate that staff appeared to be uninhibited in the expression of their concerns. A written record, as full as possible, was made at the interview. This, however, does not preclude the possibility of bias.

A possible further source of bias might arise in connection with choice of interviewees in that they were from senior management, at least having the rank of professor. This contrasted with our sample of respondents to our questionnaire, where for University A 72 per cent were non-professors and for University B the percentage was even higher at 83 percent. One reason for the choice of senior academic interviewees was to understand the influences on policy as well as the policies themselves. This could only be provided by senior management in the universities. Whereas it is true that other insights could have been given by other staff they would not have been in a position to provide the answers to many of our specific concerns, for example, about changes to staff recruitment and retention policy. The open ended questions in the questionnaire did enable staff to provide their perceptions of factors that had influenced them individually and to a lesser extent their institutions.

Range and Number of Questions

In both the structured interview and the postal questionnaire we restricted the number of questions asked of staff for reasons given earlier in this chapter. There were of course many other questions that we could have asked.

Design of Questions

Two issues require explanation here: the use of 1986 as the base year in the questionnaire and use of 'more to less' categories for the answers. The year 1986 was chosen as this was the year when explicit formula funding of universities was introduced. However, it may well not be associated with that by respondents. Indeed, it is quite likely that the people that would be most aware of the funding change was management and senior staff and that junior staff may only have been affected at the margin initially. The importance of the research exercise only becoming manifest to junior staff later as internal allocation procedures changed and staff were put under pressure to publish and teach more. However, whether staff were aware of the significance of 1986 is not really the issue. What is, their perceptions of change, if any, from that year. To choose a later year may have resulted in the results being influenced by other factors. The importance of other factors is explored in our interviews.

The use of 'more/less' categories in the answers means that we do not know the base from which the answers are made and this limits the inferences that we can make from the data. In particular it limits the potential for comparing institutions and individuals within institutions. Thus, in an institution which focuses more on teaching than research, doing 'more research' carries a different significance than it would in an institution that focuses on research. Clearly, the reverse applies to the research focused institution. Nor, using a relative response category do we know

how much more is 'more' or how much is 'less'. This may well vary from individual to individual and, indeed, from question to question for an individual. However, although these points are valid they do not undermine the value of our research which, as we have stated earlier, is concerned with the direction of change in response to funding changes and not the amount of change. This is not to say its value would not have been enhanced if we had been able to obtain data on both the direction and the amount of change for each individual. To do this would have required extensive interviews with more than 250 staff and this was beyond the resources available to us. Alternatively, we could have added further questions to the questionnaire which we did not want to for the reasons already stated. The researcher's own institutional experience of such requests for self-evaluation has left him less than sanguine about their reliability. Staff are, however, likely to have a reliable sense of the direction of change rather than the amount of change.

Use of Case/Small Scale Study

We have already mentioned in the introduction to this chapter the reasons for using a case study approach and problems attendant on such an approach. In a discussion of this issue Stake (1994) states that 'case study is defined by interest in individual cases, not by method of inquiry used' (p236). Thus, if we accept this definition, case studies can in principle, be explored through differing forms of qualitative and quantitative enquiry or, indeed, via combinations of both. However, this may not be seen by all commentators as adequate, since the method used may be viewed as being central to the inferences that may be made from the data with respect to the case being examined. Indeed, as Stake would have it 'the concept of case remains subject to debate, and the term study is ambiguous'. It is perhaps for this reason that he proceeds to say

“advocates calling the product a "case record," and occasionally we do, but the practice of calling the final report a "case study" is widely established.

Custom is not so strong that researchers (other than graduate students) will get into trouble by calling anything they please a case study". (p237).

A central issue is what can be learned from a case study or case studies or to put it more directly what is the purpose of the case study? Stake identifies three types of case study: intrinsic case studies where the purpose is a 'better understanding of this particular case' p237; the instrumental case study in which the aim is 'to provide insight into an issue or theory' and the choice of case is of secondary interest

"it plays a supportive role, facilitating our understanding of something else. The case is often looked at in depth, its contexts scrutinised, its ordinary activities detailed, but because this helps us pursue the external interest. The case may be seen as typical of other cases or not. (I will discuss the small importance of typicality later.) The choice of case is made because it is expected to advance our understanding of that other interest".

and; the perhaps inappropriately entitled collective case study

"It is not the study of a collective but instrumental study extended to several cases. Individual cases in the collection may or may not be known in advance to manifest the common characteristic. They may be similar or dissimilar, redundancy and variety each having voice. They are chosen because it is believed that understanding them will lead to better understanding, perhaps better theorising, about a still larger collection of cases".

Because authors seldom fit neatly into three categories Stake describes them as 'heuristic rather than functional'. Indeed he shows these categories to be inadequate when he proceeds to describe other categories as well. His purpose is

"My purpose in categorisation here is more limited: To emphasise variation in the concern for and methodological orientation to the case".

As is apparent from Stake's overview the justification for a case study can be made on a number of grounds, serve many purposes and employ varying methods. We have earlier justified our method of investigation, but it may be worthwhile to set them in the context of the points made above, Our 'case' concerns the effect on

universities of the changed funding method introduced in the mid-eighties. Our inquiry was constrained by limited resources and we therefore decided on a detailed study of two universities (also 'cases' in Stake's terminology). There is an intrinsic interest in the individual institutions themselves, but there is also for us the more fundamental research question of whether they have been affected similarly by the change in funding method, whether this is consistent with any theories or models that have been developed, and what the implications our results may have for policy making. The design of the data collection method, incorporating both quantitative and qualitative methods, is such as to give us the information that is necessary to understand the individual institutions response to funding changes, to explain any differences in response that we may find and to shed some light on the explanatory power of existing 'theories' of institutional behaviour and the efficacy of the funding policy with respect to university teaching and research.

Clearly, our study of two contrasting institutions is no basis for generalisation. However, negatively it may throw light on the validity of models purporting to predict the responses of institutions to changes in funding and, more positively, it may highlight crucial issues for further research. Further, if we do find that institutions as diverse as the ones selected do show a, perhaps unpredicted, pattern of common response to funding changes this would raise important questions about the policy itself.

We return to some of these issues of possible bias and shortcomings of our research in the concluding chapters.

Part II: Introduction

In the previous section of the thesis we have critically reviewed the empirical and theoretical work in the field of higher education funding and indeed much of the more general work by economists in the area of education. We concluded that some of the techniques used appear to be inherently flawed, in particular, the education production function. When we examined the models of higher education that economists and others have developed we concluded that, although they often provided useful insights into the way institutions and actors within the institutions may behave, these models were usually more descriptive than theoretical and either too general or too ambiguous to generate the stable hypotheses. In addition, apart from the Clark/Williams model, they did not focus on the question with which we are concerned: how a change from one method of funding to another may affect the teaching and research activities within and across the university system. Therefore, we decided that we would adopt a research strategy in which we would investigate the relationship between the method of funding universities and their teaching and research, with the precise effects on them to be discovered through the research. The choice of institutions and the method of creating the data to answer our questions was described in the previous chapter. In this section we present our findings in four chapters. The first, Chapter 6, describes the sample of staff selected to fill in our questionnaire and presents and comments on the results of the analysis of the questionnaires. These results are presented for the two universities in aggregated form. The next chapter, Chapter 7, examines the results when the sample is disaggregated so that we can investigate differences between departmental type, men and women, senior and junior staff, and newer and older appointments with respect to their views on changes to research and teaching. The concluding chapter of this section

presents the results of our interviews with senior staff at the two universities and relates these to our questionnaire results.

Chapter 6 : Main Findings

Introduction

In the first part of this chapter we describe the characteristics of our sample. In the second part we present the analysis of the questionnaires returned from the two universities. The results will be presented in the same order as the questions were given in the questionnaire and where appropriate we will also present the results from the open ended question which followed some of the questions. In many cases there were so few response to the open ended questions that analysis of the response would be unreliable. In those cases where there were an adequate number of responses we have coded them to facilitate presentation. At the end of the chapter we summarise the main findings and consider their implications.

The Results

Respondents and Their Characteristics

At both universities a random sample of academic staff was taken. The response from University A, was 150 questionnaires of which 145 were valid* (a response rate of 53 per cent since 273 were distributed). From University B, 106 questionnaires were returned of which 104 were valid (a response rate of 57 per cent since 182 were distributed). For a postal questionnaire this response rate is good (see Kerlinger, B. 1973) and may well reflect the nature of the sample, well educated academics who support research endeavours. It may also stem from the interest that academics may have in the changes in their academic life over recent years. A further possible reason for this high response rate may have been the accompanying letter from a senior academic at their university, Pro Vice

Chancellor level, asking for their co-operation in the survey. The universities differed little in the gender composition of the samples: in University A, 80 per cent are male and in University B, 81 per cent. These percentages are very similar to the actual gender mix in the universities. If we turn to the composition as defined by status we again find that the mix is similar to that shown in the previous chapter. The composition of the sample from the two universities is given in Table 1 below. As Appendix 5 shows this distribution is similar to the actual distribution of staff in the two universities.

Table 1

Composition of Staff in Sample (%)				
	Professors	Readers	Senior Lecturers	Lecturers
University A	28 (40)	14 (20)	23 (33)	32 (46)
University B	17 (17)	8 (8)	26 (25)	48 (47)

Figures in parenthesis are number of responses.

There is a statistically significant difference in the composition of staff between the two universities with the high ranking University (A) having substantially more professors and readers than University B, and proportionately less junior staff ($p=0.02$). This difference in part reflects the policy in University A, the elite university, of promoting promising staff and encouraging less 'effective' staff to leave. It may also be that University A has more funds to support promotion than is available in University B and that it has more funds because of its success, relative to University B, in all the RAEs to date. It can afford to keep and attract better researchers because of these additional sources of funds and so the cycle of

haves and have nots within the university system is to some extent self-perpetuating.

Three further characteristics of our sample refer to: the type of contract of staff, the year of their appointment to the university and their age. We are interested in investigating all three because we wish to know whether the sample of staff from the two universities differ since if they are different it may account for any differences we find between the universities. We are also interested to discover whether there are differences within the groups. For example, it is possible that younger and more recently appointed staff may not perceive as much change to university life as older staff who have witnessed more change merely because they have been in the university system longer. Our samples showed that University A had a somewhat more permanent full-time staff, 92 per cent as compared to 85 per cent in University B, and rather less temporary full-time staff, four per cent as opposed to nine per cent in university B. These differences are probably too small to be considered significant, although our interviews of staff at University B suggest that there may be a growing academic underclass in non-elite institutions (see chapter 8). The pattern of appointments was also similar in the universities and is presented in Table 2 below:

Table 2

Pattern of Appointment to University (%)			
	Within last 5 years	Within last 10 years	Within last 20 years
University A	33 (39)	50 (59)	73 (86)
University B	35 (32)	51 (47)	69 (64)

Figures in parenthesis are numbers.

One further possible factor that could affect our results is the age distribution of staff in the universities. The age distribution is given in Table 3 below:

Table 3

Age Distribution of Staff (%)					
	Under 30	30-39	40-49	50-59	60+
University A	1 (2)	23 (32)	36 (50)	34 (49)	6 (8)
University B	5 (5)	24 (23)	29 (28)	36 (33)	6 (6)

The pattern of age distribution is broadly similar between the universities. For both there appears to be a dearth of young blood even though, as shown in Table 2, a large percentage of staff have joined these universities comparatively recently. As the interviews will show this dearth of young staff stems, in part, from a pattern of recruitment in which only applicants who have a proven track record in research are considered for academic positions. (see chapter 8)

This description of the sample from the two universities shows a remarkable degree of similarity with respect to all characteristics except the balance between senior and junior staff, where University A, the elite institution, has a higher percentage of professors and readers and a lower percentage of lecturers.

Research

With the exception of the ratio of junior to senior staff as we show above there is considerable similarities between the staff composition of the two universities in our sample. Given these similarities and the fact that both universities are funded through the same mechanism it is of interest to investigate whether the change to

research activity, if any, is also similar. The questionnaire was designed to help answer this question by eliciting staff views on changes since 1986, or their appointment if later, in the time that they spent on research, in the type of research they undertake, on changes in the quality of research in their field. We consider each in turn.

Time Spent on Research

In University A, 82 per cent of staff claimed that the amount of time they spent on research had changed. Of these 25 per cent said that they spent more time and 75 per cent said that they were now spending less time on research. This means that of the total staff in our sample 61 per cent considered the amount of time that they spent on research to have fallen as opposed to only 20 per cent who considered their time spent on research to have risen. In University B, 78 per cent said that the time they spent on research has changed. Of these, 26 per cent said that they now spent more time on research and 74 per cent said that they were now spending less time. For the total sample this means that 59 per cent see themselves as spending less time on research and 21 per cent as spending more time. Details of the changes perceived in the two universities are given in Table 4 below in percentages (with numbers of staff in parenthesis):

Table 4

Time Spent on Research (%)					
	Much More	More	Same	Less	Much Less
University A	7 (10)	13 (19)	19 (27)	37 (54)	24 (35)
University B	8 (8)	13 (14)	22 (23)	33 (34)	24 (25)

These results are similar for both universities. This is remarkable given the differences between the two universities in terms of their backgrounds, history and research record. University A it should be recalled has been ranked very high in all the research selectivity exercises to date and has a stated policy of pursuing research excellence; yet 61 percent of staff say they are spending less time on research. University B, in contrast has been ranked amongst the lowest in all the RAEs to date and yet its staff seem, marginally, to be experiencing less reduction in the time spent on research. As we shall argue later this does not mean that staff in University A are spending less time on research than staff in University B since these are not statements about actual time spent on research, but about changes to time spent on research. Nevertheless it is still a response that is somewhat surprising and perhaps not one intended by policy makers.

To investigate further the responses to the question on time spent on research we separated our sample according to the rank of the respondent to see whether there were differences between ranks within and between the two universities. The results are given in Table 5 below.

Table 5

Time Spent on Research by Position Held (%)						
Position	University	Much More	More	Same	Less	Much Less
Professors	A	17 (5)	17 (5)	10 (3)	3 (1)	53 (16)
	B	12 (2)	0 (0)	18 (3)	24 (4)	47 (8)
Readers	A	15 (3)	5 (1)	25 (5)	45 (9)	10 (2)
	B	0 (0)	13 (1)	38 (3)	13 (1)	38 (3)
Senior Lecturers	A	6 (2)	18 (6)	18 (6)	27 (9)	33 (10)
	B	4 (1)	16 (4)	20 (5)	32 (8)	25 (7)
Lecturers	A	0 (0)	13 (6)	21 (10)	50 (23)	15 (7)
	B	11 (5)	19 (9)	21 (10)	36 (17)	13 (6)

N.B. Because of rounding rows may not add up to 100%

The most obvious point to emerge from Table 5 is that the great majority of staff in both universities perceived themselves as doing less research than (1993) than in 1986, or since their appointment. Even so, in University A, 34 percent of professors and 20 per cent of readers perceived themselves as spending more time on research. In University B only three of the 25 professors and readers in our sample considered that they were spending more time on research. What is perhaps the most striking feature of the table is the percentage of professors that are perceiving themselves as spending 'much less' time on research, 53 percent and 47 percent respectively for University A and University B. The position of senior lecturers is similar between the universities, with around 60 per cent of senior lecturers perceiving themselves as doing less research. The response from lecturers in University B was somewhat different from their senior colleagues and from University A, with 30 per cent of lecturers (14 in all) perceiving themselves as spending more time on research. Surprisingly, at University A, 65 per cent of lecturers indicate that they are spending less time on research. This result for the elite university is the more surprising because, as we shall explore later, it does not appear to result from the fact that they are new appointments fresh from doctoral or post-doctoral research.

Respondents were also asked in an open-ended question to give the reasons for the change in the time that they spent on research. It will come as no surprise to those familiar with university life in the last few years that the two major reasons given by staff for the decline in time spent on research were the demands made on staff by an increased teaching load and increased administration and management responsibilities (see Table 6 below).

Table 6

Reasons for Decline in Time Spent on Research (% of Responses)					
	Teaching Load	Admin/ Manager	QA	RAE	Other
University A (n = 155)	32 (50)	44 (68)	9 (14)	7 (11)	8 (12)
University B (n = 111)	40 (43)	47 (52)	4 (4)	1 (1)	8 (11)

QA = Quality Assessment RAE = Research Assessment Exercise.

Typical of the written responses included comments such as "Bloody admin and writing applications for grants" and "Pressure of other activities: increased teaching load; more monitoring of activities; greater difficulty of acquiring research funds". Where there had been an increase in time spent on research nearly 40 per cent of those responding stated it was because they were working longer hours or receiving assistance with their teaching duties. In the interviews with senior staff (chapter 8) further similar evidence is provided to explain why most staff have less time to do research, but for some there has been a deliberate effort from departments to reduce their teaching load so that they can do more research.

Type of Research

The Government has in recent years promoted the idea that research carried out at universities should be more related to the immediate needs of the economy. The Advisory Body to the Research Councils has also supported the idea that university research should become more applied than in the past. If this is indeed

Government policy then one desired effect on universities of funding changes should be that staff are doing less basic and more applied research. Our questionnaire asked a number of questions about staff research, the two most pertinent to Government policy are: (i) has there been a change in the type of research undertaken by staff and (ii) if there has been a change, to what? We employed the research categories used by the ESRC: basic, strategic and applied and added a further category, personal research (See Appendix 3 for research definitions).

Thirty one percent of the staff at University A indicated that there had been a change in the type of research undertaken since 1986 or since their appointment. Thirty four per cent of the staff at University B indicated that the type of research undertaken had changed. Given the relatively short period with which this study is concerned, (seven years since 1986) this may be considered a significant change. Of interest is the change in the type of research staff undertake and Table 7 below indicates what these are.

Table 7

Change in Type of Research (%)		
	University A	University B
More Basic	8	3
More Strategic	15	17
More Applied	33	34
More Personal	9	14
Less Basic	17	17
Less Strategic	3	3
Less Applied	1	3
Less Personal	10	9

N.B. The number of responses for University A was 76 and for University B 54. Some staff indicated more than one change.

The two most interesting results are for basic and applied research. Basic research seems to have been the principal sufferer, with 17 percent of responses from both universities indicating a decline only eight and three percent respectively in University A and University B claiming an increase. For applied research the results are reversed with 35 and 34 percent of responses from University A and University B indicating that staff were doing more applied research and respectively for the two universities only one and three percent indicating a decrease in applied research since 1986. If strategic research is considered as being more akin to applied than to basic research then this picture of a switch from basic to more applied research is reinforced since in both universities 13 percent or more responses indicate more strategic research and only three percent of responses from both universities suggest a decline. There appears to have been a slightly greater change in personal research in University B than University A with more staff stating that they are doing more of it than in University A, 14 as opposed to 9 percent, and fewer responses that staff are doing less, nine as opposed to 12 percent. It is perhaps a little surprising that with the substantial increase in teaching and administrative loads staff claim that there has not been a significant reduction in the time available for personal research.

When this analysis is disaggregated and the staff broken down into applied science, pure science, humanities and social sciences, it appears that all groups have been experienced a similar change, though not to the same degree (see next Chapter). As the interviews show (chapter 8) for most humanities staff research is either basic or personal and where there is change it is at the margin in certain humanities subjects, for example in languages. Although these changes are only reported by a little over 30 percent of staff it does appear that there has been a significant shift in the same direction in both universities. Indeed, the similarity in response is also remarkably close given the differences between the universities when responses are aggregated. In University A 67 percent of the responses

indicated more research was being undertaken and 33 percent that less was being done (since 1986). In University B the respective percentages were 68 and 32 percent. The fact that more research is claimed by so many staff appears to contradict the earlier evidence presented that staff claim that they are spending less time on research. One explanation might be that they are using their research time more effectively and are able even though taking less time are doing more research. Another explanation may be that although staff are doing more of certain categories of research than formerly the additional time that they are spending on it is actually less than the reduction in time that they used to devote to other categories of research.

There were 40 written responses as to why research activity had changed and nearly half of these gave their reasons as the availability or non-availability of research money. The general argument was that funders, particularly the research councils, were supporting 'wealth creating' research and 'near market' research with the result that less money was available for basic research. The other major factor producing change, cited by 20 percent of respondents, was pressure from the RAE to publish quickly. This may be related to the previous point. If publication is dependent on research findings and receiving research funds is dependent on doing applied research ipso facto more applied research will be undertaken. This pressure from research funders and the RAE and its influence on type of research output is further explored later (chapter 8).

Research Quality

Respondents were asked to comment on whether the quality of research in their area in their institute had changed since 1986 or their appointment. At University A, 50 percent and at University B, 66 percent said that quality had changed. Details are given in Table 8 below:

Table 8

Change in Quality of Research (%)					
	Greatly Improved	Improved Somewhat	Same	Declined	Declined Markedly
University A	12 (17)	21 (30)	51 (74)	13 (19)	3 (5)
University B	13 (13)	32 (33)	43 (44)	10 (10)	3 (3)

There is a difference between the universities in the type of change in research quality - with 45 per cent of University B's staff, as opposed to 33 per cent in University A, perceiving quality to have risen. Only 16 percent of staff in the elite university and 13 per cent in University B perceive quality to have fallen. It is somewhat surprising that despite the decline in time spent on research so many staff in both universities perceive quality to have risen. This result may stem from more specialisation by staff, more contract research being undertaken, or simply by staff using their time more effectively.

When research quality was perceived to have risen the overwhelmingly important reason given in the open ended question was said to be new, young and enthusiastically hard working staff, cited by 45 and 38 percent in University A and B respectively. A typical quote is the following: 'Because staff (many appointed recently) have all put in incredible amounts of their own time'. These staff, particularly in University A, are also the staff who are bearing the bulk of the teaching burden. Where quality was perceived to have fallen the blame was squarely placed on lack of time and the frantic pressure imposed on staff to publish quickly - 45 per cent in both universities. 'More pressure to produce has led to publication for publication's sake', publish irrespective of the quality of the

publication and the research on which it is based, are typical statements reflecting this view. The interviews with senior staff give some support to this assertion.

The response to questions concerning research indicate that staff are now spending less time on research than formerly: that within research there has been a shift from basic to applied research, and that concurrent with these changes research quality has risen, but less so in University A than University B. The interviews with senior staff that we report in chapter 8 may provide further insights into these changes.

Teaching

Our questionnaire asked staff whether the amount of time that they spend on tutorials, seminars and lectures had changed since 1986 or their appointment if later; whether there had been a change in categories of students taught; whether the quality of students had changed; and whether support services for students, such as library facilities, had changed. Before we consider each in turn, we should note that although we did not provide definition of tutorials, seminars and lectures none of the 250 respondents said that they had any problem in answering our questions concerning them.

Tutorials

In University A 72 percent of staff said that there had been a change in the time that they spent on tutorials. For University B there was a similar response, 75 percent. When asked how the time had changed we found the following:

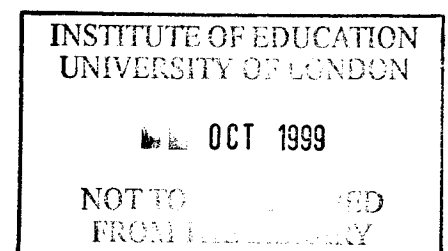


Table 9

How Time on Tutorials had Changed (%)					
	Much More	More	Same	Less	Much Less
University A	20 (29)	33 (48)	28 (41)	12 (17)	6 (9)
University B	26 (27)	33 (34)	24 (24)	11 (11)	6 (6)

The pattern of change is broadly similar with significantly more time being spent on tutorials, 53 and 59 percent respectively for University A and University B. At both universities less than 20 percent considered that they were spending less time on tutorials.

From the open ended questions we learned that the reasons for the increase in tutorial time were as any person familiar with the recent changes to higher education in England would expect: 59 and 47 percent of staff in University A and B gave the reason for the increase in time on tutorials as the increase in student numbers, coupled with a reduction in staff numbers. In some cases, as the following quotes capture, the increased need for tutorials was also associated with weaker students: "Increasing student numbers with weaker students who need more support". The question of students' quality is addressed later in this chapter and in chapter 8. In both there is support for the claim that students' academic ability on entry to the university may have declined.

Seminars

The pattern of change in time spent on seminars was less marked for the universities than the change in time spent on tutorials with 45 percent of staff in

University A and 40 per cent in University B reporting it had changed. Where there had been change it was in the direction of more time being spent on seminars, 35 and 20 per cent respectively for University A and University B. The details are given in Table 10 below.

Table 10

Time Spent on Seminars (%)					
	Much More	More	Same	Less	Much Less
University A	9 (13)	26 (37)	56 (81)	8 (11)	1 (2)
University B	9 (9)	11 (11)	71 (73)	7 (7)	4 (4)

Figures in parenthesis are number of responses

Of the 49 and 32 responses to the open-ended question respectively from University A and B, over 50 percent of the responses were, not surprisingly, that the increase in time spent on seminars was due to the increase in student numbers.

Lectures

Again, the picture for both universities was of more time being spent on teaching. For staff at University A 65 percent considered that there had been a change in the time that they spent on lectures since 1986 and for University B the percentage was 75. The direction of change was also similar for the universities with 49 per cent stating that they were spending more time on lectures in University A and 57 per cent in University B. The detailed picture is given in Table 11 below:

Table 11

Time Spent on Lectures (%)					
	Much More	More	Same	Less	Much Less
University A	14 (20)	35 (51)	36 (52)	12 (17)	3 (4)
University B	18 (19)	39 (40)	29 (30)	9 (9)	6 (6)

Again, it will come as no surprise to learn that the increase in time spent on lectures was explained in terms of increased student numbers and reduction in staff, 43 and 46 per cent respectively for University A and B, and increases in the numbers of lectures and/or course revision, 31 and 40 percent respectively. One quote encapsulates the perception: "Reduction in staff numbers. Increases in student numbers. Increases in courses taught".

If we judge the teaching responsibilities of staff by the amount of time spent on them the picture presented by these results for tutorials, seminars and lectures is of a substantial increase for most staff. The reasons for this increase and its effect on other activities such as research are considered later. The increase in teaching load affected all levels of courses, undergraduate, masters and research degrees and the pattern was similar in both universities.

Changes in Courses Taught

The pattern of increase in teaching tells us nothing about the courses that students are attending. To discover whether there had been changes to these we divided teaching into five categories: undergraduate, PGCE, Diploma, MA/MSc and

research and asked respondents to state whether there had been an increase, decrease or no change in these categories of work. Table 12 gives the results.

Table 12

Changes in Categories of Courses Taught (%)									
	Undergraduates			MA / MSc			MPhil / PhD		
	S	I	D	S	I	D	S	I	D
University A	6	86	8	27	70	3	28	68	3
University B	14	78	8	39	56	6	39	54	8

S = Same; I = Increase; and D = Decline

Numbers in the cells for PGCE and Diploma were so small that we have not included them.

The pattern of results is of almost universal increase in all categories of teaching for both universities. This probably comes as no surprise to university teachers, but if such a large percentage is claiming that they are doing more teaching and across all types of courses there may have been an effect on the quality of teaching provision, and on the quality and quantity of their other activities, such as research or administration. These effects were explored in the interviews and there does appear to be some concern that the quality of teaching and the quantity, though not quality of research may have suffered. We have already commented above on the questionnaire responses with respect to research we also asked in the questionnaire about changes in the quality of teaching.

Quality of Teaching

In both universities over 67 per cent of respondents thought that there had been a change in the quality of teaching. When asked how the quality of teaching in their field had changed we received the following response:

Table 13

Change in Quality of Teaching (%)					
	Much Higher	Higher	Same	Lower	Much Lower
University A	8 (11)	37 (53)	35 (50)	19 (28)	1 (2)
University B	5 (5)	39 (40)	39 (41)	16 (17)	1 (1)

Over 40 per cent of respondents in both universities considered that the quality of teaching had risen, 45 per cent and 44 percent respectively for University A and University B, whereas less than 20 percent in both universities thought that teaching quality had fallen. The issue of teaching quality is further examined later in an open-ended question as to why quality had changed. There appear to be a number of reasons why staff consider quality to have risen as Table 14 below shows.

Table 14

Teaching Quality Rise (% of Responses)					
	Staff Enthusiasm	More Effort/ Experience	Quality Assessment Exercise	New Teaching Methods	Oth.
University A (n = 74)	20 (15)	22 (16)	32 (24)	14 (10)	12 (9)
University B (n = 63)	21 (13)	25 (16)	29 (18)	14 (9)	11 (7)

Again the pattern is similar between the two universities. Two quotes indicate what has been occurring. "We have put enormous efforts into the improvement of our courses. They are now better organised, better structured," and "Retirement of older staff and replacement by younger, more highly motivated staff". Similar reasons for the increase in teaching quality were given in the interviews with senior staff. However, a number of the senior staff, particularly at University B were concerned that quality of teaching was increasingly likely to suffer because the resources available per student, and to academic staff, were not keeping pace with the increase in student numbers.

Quality of Students

We asked staff if the quality of student intake had risen or fallen and the following responses were given (see Table 15 below):

Table 15

Perceptions of Student Quality					
	Much Higher	Higher	Same	Lower	Much Lower
University A % (n)	0 (0)	12 (17)	52 (76)	34 (49)	1 (2)
University B % (n)	0 (0)	4 (4)	67 (70)	28 (29)	1 (1)

Again, the differences between the universities are not very great and the direction of change is common to both universities in that where there was change in quality it was perceived to have fallen since 1986. The majority of staff, however,

considered there had been no change, 52 and 67 percent for University A and University B.

Interestingly, one possible reason for the perceived improvement in teaching may be that it has become necessary because of a decline in the "quality" of student intake. The main reasons for the decline in the "quality" of students are given in Table 16 below.

Table 16

Reasons for Change in Quality of Student Intake (% of Responses)					
	School Teaching	'A' Level GCSE "worse"	More means worse	Recruitment need	Other
University A (n = 70)	44 (31)	16 (11)	11 (8)	9 (6)	20 (14)
University B (n = 47)	19 (9)	13 (6)	25 (12)	28 (13)	15 (7)

An interesting difference between the universities emerges with the "elite" university staff seeing the decline in quality as principally the fault of the school system, teaching or exam quality, whereas University B staff explain it much more in terms of having to recruit more students (for funding reasons) and that widening the net means taking people with more diverse and lower level qualifications. One quote illustrates the point "Increased numbers = lower entry standards". The elite university though also taking in more students appears to have found it easier to maintain entry standards.

Support Services

Teaching and research are dependent on the support services available, particularly with respect to library support. We therefore asked for respondents perceptions of these services. At University A, 73 percent of respondents reported that there had been a change in such services and for University B, 84 percent considered there had been a change. When asked to describe these changes 90 percent of staff said that they had declined, though 20 percent also stated that information systems available for students, computer support in libraries essentially, had increased.

Staff in both universities perceive themselves as spending more time on all types of teaching than prior to the funding changes introduced in 1986. Despite their perception of a decline in the quality of the student intake and in the support services of the universities the majority of staff considered the quality of teaching to have risen.

The responses as to how support services had changed provided a mixed picture. In University A and B respectively library facilities were perceived as having worsened by 73 and 66 per cent. A typical response was "library resources are under simultaneous pressure of larger student numbers and expenditure savings". Opinion was divided among respondents from both universities as to the effects on pastoral care with a small majority, under 10 percent, perceiving it to have fallen. At both universities computer support was said to have risen. This picture of a general decline in support was reinforced in the interviews with senior staff with concern being expressed about libraries, equipment and support staff.

Discussion of Questionnaire Results

Main Findings

(i) Research Time

Apart from the result for lecturers at university B the overall perception of staff is that they are spending significantly less time on research than formerly. One particular point of interest concerns the change in time spent on research by junior staff in university A. In the late 1980s University A had a policy of appointing staff who were expected to undertake research and gain promotion and if unsuccessful in this enterprise they were encouraged to seek more appropriate employment elsewhere. Junior staff at University A, then, were appointed to make a contribution to research. Our findings show that it is this particular group who indicate that they are doing less research and more teaching. It is possible that the research burden in universities is being borne by more contract staff and fewer, but more hard-working, non-contract academic staff. The finding that research time appears to have declined contrasts sharply with Williams's claim that 'It is likely that the new method of funding has increased the time spent on research' (Williams 1993:37). It may well be that this effect is also the opposite of the intentions of the funding councils. The interviews with senior staff at both universities indicated that there was increasing pressure from teaching and administration on time available for research but by working longer hours research output was being, for the most part, maintained. It is possible that in answering the questionnaire some staff were thinking in terms of the relative change in time spent on research, teaching and administration, rather than an absolute change in time. As we noted above time spent on university activities seems to have increased for all staff because of the funding changes.

(ii) Research Quality

The overwhelming majority of staff who considered that the quality of research had changed perceived it to have risen, although they are spending less time on research. It is a matter of considerable interest that in University A, a centre of research excellence, nearly one-third of staff felt that research quality had fallen. Issues of objective measures of 'quality' do not arise in this instance, since we are interested in is people's perception of change in quality.

(iii) Research Type

Our results, with respect to changes in the type of research, raise a number of issues. The response to funding changes could be no response (the funding method is neutral as to its effect on the type of research staff undertake), growth inhibited in one research type or a switch of research type. If we consider the 31% (44) of University 'A' and the 34% (35) of University 'B' who responded that there has been a change in the type of research that they do: in both universities there appears to have been a relative shift from basic to applied research. What is of interest is that in the elite University A only seven staff out of 145 indicate that they are doing more basic research (five indicate that they are doing less) whereas 29 say they are doing more applied research (only one is doing less). Is this an illustration of the inhibiting function of the change in funding policy? And if so, what are the consequences for the role of this university?

These results do not relate to all university staff, but to those academic staff who are funded centrally. To illustrate this point, there has, in University A, been an increase in contract research staff and all types of research income since 1986. The point is that there appears to have been a shift in the allocation of research

activities between different categories of university staff as well as some **shift in** the type of research undertaken.

(iv) Teaching Time

We do not know from the questionnaire whether this is caused by changes in student numbers, type of student, changes in methods of teaching or course **design** (modularization of courses and greater assessment via course work involves more time). Promotion and incentive payments or other policy changes **in the** universities might also have encouraged academics to devote more time to teaching. Interviews with senior staff and data from the universities shed **some** light on these questions. Although there had been some changes in methods of teaching and modularization of courses and changes in the type of student, **the** overwhelmingly important reason was said to be the increase in student numbers. We do have direct evidence with respect to student: staff ratios and these **show** that for all categories of student, undergraduate and postgraduate, student: staff ratios have risen. Table 14 presents undergraduate: staff ratios for selected years and shows the increase to be 25% for University A and a massive 70% for University B.

(v) Teaching Quality

More time spent on teaching should, *ceteris paribus*, mean that the quality of teaching has risen. (If incentives are also provided for good teaching the pressure on staff to improve quality is increased). However, as staff: student ratios have fallen (table 17)

Table 17

Undergraduate:Staff Ratios (%)			
	1986-87	1990-91	1992-93
University A	7.7	8.3	9.6
University B	9.1	12.1	15.5

Source: UGC/UFC (1986-93) and internal documents.

teaching might suffer with less time available per student. Despite the perception of some staff in both institutions that the quality of students had declined in the period under examination, the percentage of graduates emerging with a first or upper second class honours degree, one measure of quality of student, does not appear to support this. Table 18 gives the figures for selected years, with those in parentheses giving the percentage of firsts.

Table 18

Degree Results (%)			
	1986-87	1990-91	1992-93
University A	55.4 (10.9)	58.8 (11.4)	62.3 (12.6)
University B	43.9 (9.7)	50.5 (11.7)	52.2 (9.8)

Source: UGC/UFC (1986-93) and internal documents.

These results, if they suggest anything, indicate an increase in teaching effectiveness since the unit of resource, whether measured by student: staff ratios or finance, has fallen. However, this conclusion rests on the assumption that the quality of degrees has not changed over time. Work at Oxford Brooks University

suggests that for some subjects in certain institutions this may not be a valid assumption (see for example Gibbs, Jenkins (1992)). The fact that the HEFCE itself has recently launched an inquiry into teaching standards and the quality of degrees indicates its concern that standards may be falling. Certainly our interviews with senior staff indicate that some are concerned that degree standards are under threat.

(vi) Support Services

The perceptions of staff that these have declined is, to some extent, reinforced by the data provided in University Performance Statistics - the spending per FTE staff and per student as given in table 19.

Table 19

Spending on Libraries			
Factor	1986-87	1990-91	1992-93
University A			
Per FTE student	218	274	328
Per FTE staff	2050	2770	3270
University B			
Per FTE Student	209	272	252
Per FTE Staff	2250	3340	3490
As % of General Expenditure - A	3.3	3.3	3.4
As % of General Expenditure - B	4.2	4.2	3.7

Source: CVCP/UGC and UFC (1987, 1990, 1992)

Although in money terms there has been no significant fall in spending, in real terms there has been some change both because of sterling devaluation and publishers' policy of increasing book and journal prices above the rate of inflation. However, per capita spending may fall because titles are being more carefully selected and library management has improved, resulting in support per student actually rising. In fact at both institutions the operation of libraries was said to have improved, but in neither case did the lecturers believe this compensated for the fall in expenditure on support. This reinforces the perception of staff that library support has fallen.

Summary and Conclusions from Chapter 6

In 1986 a new university funding method was introduced by the UGC of which the major feature was its explicitness as to how university teaching (student numbers) and university research were to be rewarded. This method of funding universities, now including the new universities, has, with a few minor modifications, remained essentially the same since 1986. This chapter has examined the effect on research and teaching of these funding changes through a questionnaire distributed to a sample of academic staff in two universities, one an old multi-faculty university ranked very high in the research selectivity exercise and the other a former CAT, ranked low in the research selectivity exercise. A crucial issue is the extent to which the university responses are related to changes in funding method. There is nothing in the questionnaire which directly relates to funding changes except the date 1986. However, interviews with senior staff in both universities indicated unambiguously that resource allocation and internal allocation procedures had been developed to reflect changes in funding methods. The relation between changes in method of funding and staff responses is mediated by managerial changes within universities.

Our principal finding was that despite the differences in the history and research rankings of the two universities their response to the funding changes is remarkably similar. That is, most staff perceive themselves as spending less time on research than prior to 1986. (This is true for readers and professors as well as for other staff). There appears to have been a relative shift away from basic research to applied research, for all groups of staff and cost centres. Where the quality of research is perceived as having changed, it is thought to have improved.

The results for teaching are perhaps less surprising. Most staff, again including readers and professors, are spending more time on all levels and types of teaching, though the effect is greater for junior staff. This indicates that time available for research and publishing is falling. Staff perceive the quality of teaching to have risen, even though they perceive the quality of student intake to have fallen. Staff also perceived a decline in student support services, particularly of library support.

From these results a number of points arise that should be of interest to the HEFCE and its paymaster, the Government. The first, not necessarily obvious to policy makers, is that changes in funding method do affect teaching and research, and the balance between them. Whether the funding council wished it or not, there appears to have been some trade-off between teaching and research, with teaching gaining; within research itself there appears to have been a trade-off between basic and applied research with applied research emerging as the winner.

It is very possible that government policy with respect to Research Councils and funding methods contributes to produce a multiplier effect. Changes in funding methods, together with Research Council policy, may encourage applied research at the expense of basic research.

Although the effect on different categories of staff is not precisely the same, the pattern is that there has been a decline in time spent on research and an increase in teaching time - a pattern as obvious for the supposed leaders of research in universities, professors and readers, as for other staff. If the UK wishes to maintain or indeed enhance its position in the world of fundamental and applied research it is by no means clear that its funding policy is encouraging the necessary focusing of effort by the acknowledged leaders of research. Perhaps an even less benign effect is that the two institutions, starting from totally different positions historically and with respect to their research rank, end up by reacting in very similar ways. Indeed, although readers and professors in university B are doing less research than in university A, it appears that their lecturers are actually doing more than in university A. This may be no surprise to those who argue that funding formulae tend to push institutions in the same direction, but it may be an unwanted result if the Government and the HEFCE are interested in developing an elite set of universities, specialising in research and higher levels of teaching, with the rest specialising in lower levels of teaching and doing only small amounts of research. A possible conflict of equity and efficiency emerges here: if we have scarce research resources, to achieve the best results perhaps we should allocate them to those institutions already well endowed with human and physical capital and with a proven track record in research. This policy, though possibly enhancing efficiency, may be inequitable in that it gives to the 'haves' and consigns the 'have nots' to the position from which they cannot rise, because they are starved of resources.

Our case study of these two universities suggest that undifferentiated policies applied to highly differentiated institutions may well bring homogenizing consequences to the detriment of other policy objectives. Perhaps our research brings out this contradiction between government funding intentions and outcomes in higher education. In order to examine further these conclusions we

decided to disaggregate the sample of staff in the two universities to see if the aggregated results presented were disguising subtler changes within the universities. These results are presented in the next chapter. To investigate further the meaning of our results we also interviewed a number of senior staff at each of the two universities. The results of these interviews are presented in chapter 8.

Chapter 7: Teaching and Research: Similarities and Differences by Gender, Year of Appointment, Rank and Department

Introduction

We have earlier described university staff's perception of changes to their research and teaching activities since 1986 and we have also compared the experiences of the universities. The picture described was based on the aggregation of all staff in the universities, but it may be the case that different groups within the university have been affected differently. We therefore carried out further analysis, dividing the sample into the following subgroups: gender, year of appointment, rank and department. The reason for investigating these sub-groups are given below.

Gender

There may be gender differences in the perceptions of changes to research and teaching. To discover if this is the case we analysed the answer to each question according to the sex of the respondent. Where differences are found we attempt to explain how these may arise.

(Such differences may also be correlated with subject taught and rank.)

Year of Appointment

There may also be differences between those staff who have been at the universities longer and those who were more recently appointed. One possible reason for differences here is that the more recent appointments entered the universities after many of the changes to funding had already begun to take effect

and therefore they may not perceive the same changes, or certainly not to the **same** degree, as earlier appointments.

Rank

There may be differences associated with the rank staff hold in the university. One possible difference may arise because senior staff have been **able to** concentrate their energies and time on research whilst junior staff have been **left** with the burden of an increased teaching load.

Departments

There may be systematic difference between staff teaching different subjects. For example, across the country there has been a larger change in the numbers of students studying Arts subjects than there has been in Science or Engineering. This may mean that staff in the Humanities, and for that matter also in the Social Sciences, have different perceptions from staff in engineering and sciences of how their teaching and research responsibilities have changed.

In order to examine whether there were differences across these subgroups, cross tabulations and the Pearson Test of significance was used. Where results are significant at the 0.05 level the associated tables are provided in Appendix 6.

The first set of analysis presented here examines differences and similarities in the subgroups' perception of the changes in teaching. This analysis is undertaken for each university first and then differences between the universities are discussed. The same procedure is then followed for research, support services and the quality of students. A concluding section examines differences between the two universities.

In examining the differences we have followed the structure of the questionnaire, we first consider whether the perceptions of there being change is similar within each of the sub-groups. We then examine whether the direction of change within each sub-group is similar. To illustrate the reason for this form of analysis consider the following situation. Within the departmental sub-group all staff who perceive that there has been change may perceive it as being in the same direction. For example, all staff responding to the question on changes in perception of time spent on seminars may view it as having increased. However, although the perception of the direction of change is similar there may be significant differences in the proportion of staff within departments who perceive such change to have occurred. In this case there may be a difference between departments; Applied and Pure Science staff appeared to have experienced less change to the time spent on seminars than Humanities and Social Science staff. Such differences are not captured in the aggregated data presented in our earlier analysis, but are important and require comment as they suggest that the funding changes, which we argue are the major cause of change, may not affect all university staff in the same way.

Teaching: Similarities and Differences Within Universities

University A

1. Time Spent on Tutorials

Perception of change: This was analysed by gender, year of appointment year, rank and department. There was no significant difference found within the subgroups in the perception of change to the time spent on tutorials. Most staff in all groups perceived there to have been a change in time spent on tutorials.

Direction of change: Although the perception of all groups was that time spent on tutorials had risen, there were differences within some of the sub-groups in their perceptions of the extent to which it had changed. We will consider each of the sub-groups in turn. Within the gender group no significant differences were observed. This may be surprising to those who think that women may be discriminated against with respect to research opportunities and promotion, both resulting in women receiving an increased teaching load, which would include an additional tutorial load. (However, it may still be that their teaching has increased with respect to seminars and lectures, rather than tutorials and this was investigated later). The results for year of appointment did not quite reach significance ($p=0.07$). This indicates that although newly appointed staff perceive the changes to their tutorial load to have increased slightly more than their colleagues, it is not sufficiently different to be significant. When the same analysis was carried out for the sub-group defined according to rank the results were similar to those for year of appointment in that they did not quite reach significance at the five percent level ($p=0.07$). There does appear to have been an increase in time spent on tutorials and it is borne more by the senior lecturers and lecturers and, to a lesser extent by readers, than by professors. Thus although there does appear to be some differences in perception of change they are only significant at the 0.07 level. Within the departmental group there is a very significant difference in the perception of the degree to which time spent on tutorials has changed ($P=0.001$) Staff in the Humanities and Pure Sciences perceive greater increases in the time that they spend on tutorials than staff in the Applied Sciences and, to a lesser extent, the Social Sciences.

2. Time Spent on Seminars

Perception of change: There was no significant difference within subgroups, although for the departmental sub-group the test was nearly significant at 0.051.

Applied and Pure Science appeared to have experienced less change than Humanities and Social Science. This may be explained by the greater proportionate increase in student numbers in Humanities and Social Sciences.

Direction of change: No significant differences were found for any of the sub-groups. The perception of all groups was that time spent on seminars had risen. These findings indicate that females do not appear to be asked to do more teaching than their male colleagues; that irrespective of rank or years in the University the teaching burden, at least for seminar teaching, is shared equally; and that the difference noted for tutorial teaching in the Applied Sciences are not being compensated for by any increase in seminars when compared to other departments.

3. Time Spent on Lectures

Perception of change: No significant differences were found for any of the subgroups. For all groups there was a perception that time spent on lecturing had changed. Thus for all categories of teaching, tutorials, seminars and lectures there appears to be no significant differences across sub-groups.

Direction of change: With the exception of the departmental subgroup no significant differences were found in the direction of change in time spent on lectures - it had risen. However, significantly more staff in the Pure Sciences, and to a lesser extent the Humanities and Applied Sciences, than in the Social Sciences, perceived it to have risen 'much more' ($p= 0.00002$). Another difference between departments was that proportionately more staff in the Humanities and Applied Sciences considered the time spent on lecturing to have fallen, respectively 32 percent and 20 percent. This finding for Humanities is slightly at odds with the comments reported earlier that University A has

expanded student numbers in those areas where there is 'spare' capacity (although the lecturers may not agree with this) and a surplus demand for places, i.e. in Humanities and Social Science. One possible explanation is that the lectures are given to larger groups of students than previously and that the burden of lecturing is not being spread across staff as it had been, so reducing the burden of lecturing for some staff.

4. Change in Teaching, by Level of Course

If we turn to the questions concerning the respondents' perceptions of change in the amount of undergraduate, masters and research students' work, the pattern across the groups and within the groups is broadly similar with all groups perceiving work in all areas to have risen. One comment, and again it relates to the differences between Humanities and Sciences, and to a lesser extent Social Science, is that research student work in the Humanities does not appear to have increased as much as in the Science.

5. Change in Quality of Teaching

Perception of change: There were no significant differences within or between groups as to whether the quality of teaching had changed. In all cases more than 55% of respondents perceived there to have been a change in the quality of teaching. This means that some 45% did not perceive there to have been a change.

Direction of change: Apart from the department subgroup there were no significant differences in the direction in which teaching quality had moved - it had risen. In each group at least 60% attested to this. In contrast, within the departmental sub-group there was a significant difference ($p = 0.002$). Within Humanities, Pure Science and Applied Sciences over 60% claimed quality had

improved. In Social Sciences 60% claimed quality had fallen. It is not clear why social scientists' perceptions should be different as the figures for change in enrolments are no higher than, for example, those in humanities subjects.

Comments on Results for Teaching in University A

Our results for the sub-groups indicate that the changes to funding are affecting all groups similarly. That is, in general, the changes do not appear to discriminate systematically in favour or against the sub-groups we examined. There are however some differences, both between and within sub-groups, that do require comment. We consider the differences revealed in our results in turn.

Tutorials

Two differences emerged within the groups. The first concerned the direction of change within the sub-groups defined according to year of appointment and rank. As we suggest later these may be treated together as they are correlated. The reason for the differences, both very close to significance, may well arise from the fact that although all staff are experiencing an increase in the amount of tutorial work required of them, the more junior staff, in terms of years at the institution and rank, are being required or feel obliged to spend proportionately more time on tutorials. It may also be the case that although all staff are expected to contribute to the RAE the 'high fliers' in terms of research contribution, readers and professors, are being given more time in which to make their contributions. It is also possible, and this may be at odds with the previous point, that professors are becoming so involved in administration that they have less time available for teaching (and research).

The differences at departmental level are more readily explained. There has been a greater increase in the numbers of Humanities and Social Science students than of Science students and if, as is claimed in the interviews with senior staff (chapter 8), the quality of students for all groups has fallen, there will be a greater need for additional tutorial support in the Humanities and Social Sciences compared to other groups unless standards are to be allowed to fall.

The reason for these changes in perception of time spent on seminars may be similar to that for tutorials: that is, that the need for seminars has risen more in those departments where student numbers have increased most - Humanities and Social Sciences.

The findings for lecturing are a little at odds with the above comments. We might have expected that the time spent on lecturing would have risen more within the Social Science and Humanities departmental groups for the same reasons that they have for tutorials and seminars. In fact, the greatest perception of increase is within the Pure Science group and, as we noted, more staff in the Humanities and Applied Science perceive a fall in the amount of time that they spend on lectures. It is possible that within the Pure Science group that lecturing is being substituted for tutorial and seminar support. This, our evidence suggests, is not the case for Applied Science since the responses indicate no greater change in tutorial and seminar support within this group, if anything rather the reverse for tutorials. Within the Humanities group there may have been a change in the method of teaching, a change which may include giving lectures to much larger groups than formerly. Unfortunately, we can only speculate about the changes to the methods of teaching employed across the sub-groups because we did not specifically address this question in our questionnaires or the interviews with senior staff.

The pattern of changes to teaching by level of course indicates an increase for all groups. This is explained by the overall increase in student recruitment reported in chapter 6 and 8. The one noticeable difference was that Humanities staff perceived less change than other staff in the numbers of research students. This may be accounted for by the fact that it is more difficult for students in Humanities to obtain external financial support than in other faculties. Another possible explanation, which may be complementary to the previous one, is that Humanities staff are so overwhelmed with the increase in undergraduate and masters students that they have less time to take on more research students.

Teaching: Similarities and Differences Within Universities University B

The same procedure will be followed as for University A in that we will present the responses to the questions relating to teaching load and the quality of teaching to discover whether they differ within the sub-groups. The sub-groups are gender, year of appointment, rank and department.

1. Time Spent on Tutorials by Sub-Group

Perception of change: There were no significant differences in the gender sub-group. When classified according to year of appointment the Pearson test was significant ($p = 0.039$). Oddly, the more recent appointments perceived more of a change than their colleagues, 88 percent as opposed to 69 percent. For the sub-group defined by rank there was no significant difference. Although not significant there was a difference in that more of the junior staff, senior lecturers and lecturers perceived there to have been a change in time spent on tutorials. Respectively, for professors, readers, senior lecturers and lecturers the percentages perceiving change were 63, 33, 80 and 81. The departmental subgroup also

revealed significant changes ($p=0.028$). It appeared that Humanities and Social Science staff perceived there to have been much more change than the Science staff.

Direction of change: There were no significant differences within any of the subgroups. All sub-groups perceived time spent on tutorials to have increased by 60 percent or more.

2. Time Spent on Seminars

Perception of change: There were no significant differences between males and females or between professors, readers senior lecturers and lecturers in their perception of change in time spent on seminars. However, there was a significant difference between departments ($p= 0.005$) Within the departmental subgroup more Social Scientists considered there to have been change than staff in other departments. There was also a significant difference by year of appointment ($p=0.006$). 56 percent of new appointments as opposed to 24 percent of older appointments considered there to have been change.

Direction of change: There were no significant differences within any of the subgroups as to the direction of change. The majority of those who perceived there to have been a change thought that the number of seminars they taught had risen.

3. Time Spent on Lectures

Perception of change: For all subgroups there was a perception that time spent on lectures had changed. Although not quite significant ($p=0.057$) it appeared that more of the recently appointed staff perceived there to have been a change, 84 and 64 percent respectively for newer and older appointments.

Direction of change: There was a significant difference between males and females ($p=0.024$). 84 percent of men considered themselves to be doing either more or much more lecturing. By contrast 54 percent of women thought that they were doing more lecturing. There was no significant difference between newer and more recent appointments. Indeed, the pattern of response was almost identical with more than 75 percent saying that they were doing more lecturing. However, as we showed above, a greater percentage of newer appointments are perceiving there to have been a change in the time that they spend on lectures. There was no significant difference within the subgroup defined by rank. All in the group considered that their lecturing load had increased. However, although not statistically significant a higher proportion of lecturers and senior lecturers than professors perceived their lecturing load to have risen, respectively 86, 80 and 55 percent. (Only two readers responded and both said that their load had risen). Within the departmental sub-group there were also no significant differences: in all departments more than 80 percent perceived lecturing load to have risen.

4. Change by Type of Student

All subgroups perceived that teaching at undergraduate, masters and research level had either risen or remained the same in approximately equal proportions. There was only one subgroup in which a significant difference emerged and that was for change in teaching research students within the year of appointment grouping ($p=0.027$). 60 percent of older appointments as contrasted with 15 percent of more recent appointments considered their work in this area to have increased.

5. Quality of Teaching.

Perception of change: Apart from the gender subgroup there were no significant differences in perception of changes to the quality of teaching. For the gender group there was a significant difference ($p=0.03$) with proportionately more women stating that quality had changed.

Direction of change: The quality of teaching was considered to have risen by both men and women. Although more women than men perceived quality to have changed there was no significant difference in the direction of change. There were no significant differences found for either the of the rank or departmental sub-groups. For the year of appointment sub-group although the Pearson test was not significant at the five percent level it was very close ($p=0.051$). Both new and old appointments viewed the quality change to be generally positive. However, one third of new appointments perceived quality to have fallen, whereas only 10 percent of older appointments considered it to have fallen.

Commentary on Results

Tutorials

There were significant differences for three of the subgroups, rank, year of appointment and department. We will treat each in turn. Senior staff perceive there to be less change than junior staff; Readers reported there to have been no change. One explanation for this is that senior staff, though perceiving changes to have occurred, are not being required to do as much of the additional teaching as the junior staff. The notion that junior staff are being required to do proportionately more teaching is supported by the perceived changes when analysed by year of appointment. More recent appointments will generally be

junior staff and it is not surprising that they also have experienced a greater change than their older colleagues. What is noteworthy is that this group has only been appointed in the seven years since the funding change and yet are very clearly experiencing what appears to be a fairly dramatic change in the requirements of their job.

The fact that Humanities and Social Science staff, as in University A appear to have experienced a greater change in their tutorial work is probably explained by the fact that they have had proportionately greater increases in the number of students and that if these students are less able, as our questionnaire results suggest they are, they require more of this type of support. These results whilst indicating that staff are generally providing more tutorial support than formerly do not mean that the tutorial support for each student has increased.

Seminars

It is not clear why staff in the Social Sciences should have significantly different perceptions of the change in time spent on seminars to other staff in the university. No mention was made in the interviews or questionnaire of changes in teaching method which could account for the difference, but we could speculate that they are putting more effort into lectures and tutorials. The explanation for the difference between newer and older appointments is probably the same as that for tutorials in that newer appointments will normally hold more junior positions and the burden of teaching, though increasing for all staff, is falling more heavily on junior staff. (The relationship between position and year of appointment is explored in a later section of this chapter). The perception of most staff in all sub-groups of time spent on seminars increasing is accounted for by the increase in the student:staff ratio in University B.

Lecturing

The fact that more recent appointments considered there to have been more change than older appointments may be explained as above: they are bearing a slightly greater burden of the lecturing than their older and usually more senior colleagues. The difference between males and females in the extent to which their time on lecturing has increased may be partly explained by the fact that women may be spending more time on research than men. Our earlier analysis shows that it is not explained by the fact that women are doing more tutorial and seminar work than men. We could speculate that in the past men were able to spend more time doing research, whilst women did more of the teaching but, with the dramatic increase in student numbers the teaching burden had to be shared more equally. And, with the advent of the RAE, women had to be given more time to do research if they were to be included in the exercise. In the next chapter where we report our interviews it is suggested that all staff are encouraged to research and publish and are given support to do this.

There was only one sub-group, year of appointment, within which there was a significant difference with respect to changes in perception of the time spent on teaching research students. Older appointments were four times more likely than more recent appointments to have seen a rise in their work in this area. This result is no surprise if, as is likely, more experienced staff are more prepared and expected to take on research supervision, are more likely to be asked to do so by students and are more likely to hold research grants and contracts into which research students can be placed (University B is a technological university and this last point is therefore particularly pertinent). It is perhaps surprising that for the same reasons a significant difference was not found for the sub-group defined by rank. We will examine the relationship between these two groups later.

Quality of Teaching

There was only one sub-group for which there was a significant difference in the perception of change in the quality of teaching: more women than men perceived the quality to have changed. Both men and women who consider quality to have changed perceived it to have risen. Further speculations of reasons for differences between the sexes are given in the later discussion. With respect to the direction of change in teaching quality, differences of perceptions within the year of appointment group were very close to significance. One explanation is that more recent appointments have a heavier teaching load and because of this cannot give as much time either to preparation or to individual students and this affects their views as to teaching quality. Again the issue arises of why this result is not similar for the sub-group for rank, an issue we address at the end of the chapter.

Research: Similarities and Differences Within Universities

We will follow the same procedure as for teaching. That is we will first consider University A and then University B. Each of the answers to the research questions will be presented in turn, with the perception of change being considered and then the direction of change. General discussion of the results will follow.

University A

1. Time Spent on Research.

Perception of change: For only one subgroup was there any significant difference. Within the subgroup defined by year of appointment there was a

highly significant difference ($p = 0.009$). More of the older appointments perceived there to have been a change, 63% as opposed to 32%.

Direction of change: There were no significant differences between males and females. Both sexes considered that the amount of time spent on research had fallen, although slightly more so for males than females, 26 percent as opposed to 19 percent, considered that research time had risen. No significant differences were found in either the year of appointment or departmental group; for both groups over 70 percent saw time spent on research as having fallen. In contrast to other sub-groups, that for rank did show a significant difference ($p=0.038$). Although all ranks perceived time spent on research to have declined, over 70 percent for all ranks, professors and senior lectures now regarded themselves as spending much less time on research than previously, respectively 43 percent and 37 percent, whereas the percentages for lecturers and readers was somewhat lower, respectively 19 percent and 17 percent.

2. Change in Type of Research

Perception of change: Within two of the subgroups, gender and department there were no significant differences. There were significant differences according to rank ($p=0.047$) and according to year of appointment ($p=0.05$). Within the rank sub-group 52 percent of senior lecturers perceived there have to have been change, whereas amongst other staff the highest percentage was 28 percent. Within the year of appointment group, older appointments perceived far more change than more recent appointments, respectively 79 percent and 53 percent.

Direction of change: There were no significant differences within any of the subgroups in their view of the direction of change in the type of research: most staff

considered there had been a move in the direction of more applied research. This may be a little surprising for Humanities staff.

3. Quality of Research

Perception of change: There were no significant differences within any of the subgroups. In all subgroups fifty percent perceived change and 50 percent perceived no change.

Direction of change: There were no significant differences in the gender, year of appointment or rank sub-groups. The general perception was that the quality of research had risen. Although not significant within the rank sub-group, more lecturers and, particularly, Readers rather than professors or senior lecturers perceived quality to have fallen. Within the departmental subgroup there was a significant difference ($p=0.006$). 90 percent of Social Scientists considered quality to have risen, whereas the next highest percentage, for Applied Science was 20 percent less, at 70 percent. For both Humanities and Pure Science it was a little less than 60 percent.

Comment on Results

Time on Research

The year of appointment group was the only sub-group for which there was a significant difference in the perception of change, with this perception being greater for older than for more recent appointments. One possible explanation for this difference is that more recent appointments (post-1986 and many after 1990) were entering a university that had already made some changes as a result of the changes in the funding method. Yet 70 percent still perceived there to have been

change in the time that they spent on research. It is a little surprising that a similar finding was not found for the rank sub-group where the result was not significant. We explore possible reasons for this later.

The one significant difference in direction of change in time spent on research was within the rank sub-group where senior staff perceived a more dramatic reduction in time that they could spend on research than junior staff. The explanation for this may be as we suggest above that these staff have witnessed more changes merely because they have been in the university longer; our open ended question results certainly indicate that their time available for research may have been reduced because of their increased administration responsibilities on top of their increased teaching load. As with the result above it is a little surprising that a similar result was not found for year of appointment since one would envisage considerable overlap between the two groups. It is possible that the reason for the difference between the two groups is that the rank group is more influenced by administration responsibilities and the year of appointment group by the growth in teaching responsibilities. Differences between the two groups are explored later.

Change in Type of Research

For this question there was a similar perception for the sub-groups defined by year of appointment and by rank. Within the rank sub-group the greatest change was for senior lecturers. One reason for the difference may lie in the fact that lecturers did not need to change the type of research because they were already working in the applied areas of research. Readers and professors may not have needed to change if they were already established in their fields and did not need change to obtain advancement, for they had already achieved it. Senior lecturers, however, may have felt more pressure to adapt to the new culture of more applied and strategic research in order to improve their prospects of obtaining grants and

promotion. If, as proves to be the case, many of the senior lecturers have been in University A for more than seven years, a similar explanation will apply to the differences found in the year of appointment sub-group.

Quality of Research

The only significant difference found was for the departmental sub-group; Social Science staff perceived quality to have risen more than other staff. We do not have any obvious explanation for this difference.

Research: Similarities and Differences Within Universities

University B

1. Time Spent on Research

Perception of change: There were no significant differences within any of the sub-groups

Direction of change: There were no significant differences in the sub-groups defined according to year of appointment, rank or department, with most staff perceiving time spent on research to have fallen. There was however a significant difference between males and females perceptions of the direction in which time spent on research had altered (($p=0.002$). Over 70 percent of women considered that they were spending more time on research. Only 20 percent of men shared this perception.

2. Type of Research

Perception of change: For the subgroups defined by department, year of appointment and rank the chi-square tests were insignificant. For the gender sub-

group it was close to being significant ($p=0.052$). More men than women perceived there to have been change in type of research.

Direction of change: There was no significant difference within any of the sub-groups as to the changes in the type of research: most staff considered that where there had been a change it had been towards more applied and strategic research. As with University A this also appeared to be the case for Humanities staff.

3. Quality of Research

Perception of change: There was very little difference between the subgroups for gender, rank and department: the differences within them were not significant and 65 percent of each sub-group perceived there to have been change. The result for the sub-group for year of appointment were almost significant ($p=0.056$) with the newer appointments perceiving there to have been more change than older appointments (78 percent as opposed to 57 percent).

Direction of change: There was no significant difference for gender sub-group, both sexes perceived quality to have risen (over 75 percent). There were also no significant changes in the other sub-groups, although for the year of appointment sub-group the result was almost significant ($p=0.052$) with more of the new appointments perceiving quality to have fallen (30 as opposed to 10 percent)

Comment on Results

Time on Research

There was a significant difference between men and women in their perception of the direction of change in time spent on research, with more women considering

they were doing more research. This may be related to the point made earlier that men are now being required to take on a larger share of the teaching load than previously. In addition, proportionately more men are in senior positions so the reasons given earlier, the increase in the administrative burden for senior as opposed to junior staff, may also help to explain the difference between men and women. Further speculations are made in the next section.

Type of Research

None of the results was significant with respect to this question. All sub-groups perceptions of both change and its direction are similar: respondents generally perceived there to have been a shift from basic and personal research towards more applied research.

Quality of Research

The only results close to significance were those for the appointments sub-group with more of the recent appointments perceiving there to have been change and more of them perceiving quality to have fallen. These results are almost certainly related to each other since if one group is perceiving more change in the direction that quality has moved this will be reflected in the overall perception of change. Again, it is of interest that the sub-group defined according to rank shows no significant difference for either perception of change in research quality or its direction. Although we explore the question of whether the groups are from statistically similar populations later we could speculate that the group identified by rank were appointed when the university was a CAT, or when the CAT culture still prevailed, whereas the more recent appointments, irrespective of rank, were recruited from universities with more traditional standards of research quality

which they perceive to have fallen. This issue is explored at the end of the chapter.

Similarities and Differences Between University A and University B

The first analysis of our data (Chapter 6) considered general differences and similarities between the two universities. In this chapter we have examined differences within each institution with respect to gender, year of appointment, rank and department. Here we shall take the final step and enquire whether gender, year of appointment, rank or department play a different role in the two institutions with respect to perception of changes in teaching and research. We shall examine the differences in the order in which they have been analysed earlier, that is gender, year of appointment.

Gender

Teaching: There were only two differences between the staff of the universities with respect to teaching. The first was with respect to lectures where the men in University B significantly differed from the women in that more of them considered the amount of time that they spent lecturing to have risen. The second difference concerned the quality of teaching where, again in University B, there was a significant difference in that more of the female staff considered the quality of teaching to have risen.

Research: The only difference between the universities was that in University B there was a significant difference between men and women in their perception of the direction of change in the time spent on research. More women considered they were spending more time on research.

Comment

The sub-group gender appears to be more important in University B with respect to the differences in time spent on lecturing and research. It appears that there may be a trade off between them. Women may be able to spend more time on research because they are not having to do as much of the increased lecturing as their male colleagues. Whether this is deliberate policy of the management in University B we were unable to ascertain. It is also possible that women may be more research orientated as in order to compete with men they may feel that more is expected of them. It is also possible that there is greater selection among women than men for academic posts. As to womens' perception of more improvement in the quality of teaching. The question called for a general answer about the quality of teaching in the institution. Why women thought it had improved more than the men may be because their own teaching relative to the men's was better prepared and they may have thought (mistakenly) that the same change was occurring in the men's teaching (as a consequence of the funding changes). Hence the differences in perception between the men and women. These cautious speculations are on the basis of differential selectivity of men and women for academic posts. This could be the result of both demand side factors (institutional selection criteria) and supply side factors (women entering academe have special qualities). Our interviews with senior staff did not shed any light on these issues.

Year of Appointment

Teaching: Differences between the universities were found to be significant again within the University B sub-group. Within University B more recent appointments perceived more change than older appointments in time spent on tutorials and seminars. It was very close to being significant for lectures, too

($p=0.057$). There was also a significant difference with those appointed longer stating that were doing more postgraduate research teaching.

Research: There were a number of differences between the two universities. With respect to changes to the amount of time spent on research and changes to the type of research. In University A older appointees perceived more change in time spent on research than more recent appointments - they were spending less time on research. There were no differences in University B. As to the quality of research more recent appointments in University B saw more change than older appointments and, again in the same university, more recent appointments perceived quality to have fallen.

Comment

It appears that there have been changes to teaching in University B which have affected more recent appointments more than older appointments. There have, as our interviews will reveal, been big changes to teaching in University B with semester teaching and modularisation being introduced. There have not been the same changes to teaching in University A.

If we turn to the results for research those for University A could be explained by the fact that older appointments were used to having a good deal of time to pursue their research interests and that they could pursue the research in areas in which they were interested. University B, at least as judged by the RAEs has never been strong in research activity and certainly not in the areas highly valued by the research panels. However, being an ex-CAT much of its research was applied and in the 'wealth creating' arena and therefore the recent emphasis on this type of research would not have altered the general orientation of its research in the engineering and science areas. The effect on the humanities and social sciences

staff, being relatively small within the university, would tend to be dwarfed by the results from the rest of the staff in the university. The fact that in University B the more recent appointments had different perceptions relative to other 'older' appointments as to the change in research quality may be explained by the fact that they have come from other universities with different research 'cultures'. By this we mean they have different notions as to what counts as good research. In University A as compared to University B there was a much stronger orientation to 'basic' research and thus the recent emphasis by the Government and research councils on 'wealth creating' and applied research would have been more marked for older appointments.

Rank

Teaching: There were no significant differences between the universities with respect to teaching.

Research: The only significant differences are to be found in University A. Here the professors and senior lecturers saw significant changes, reductions, in the time that they had available for research. In the same university the senior lecturers perceived there to have been more change to the type of research that they undertook; relative to other ranks senior lecturers appear to be more involved in applied research.

Comment

It is no surprise that in this elite type of university, staff would have considered that they had less time for research than previously. Professors in the past had far less administrative responsibilities and teaching duties. Senior lecturers might have expected in the past to have more time for research to further their careers, but are now being required to do more teaching than previously. If, and this is

speculation, they want to advance their careers through research and publication more research money is available in applied areas (see previous chapter) and thus this group, whatever its previous research interests were, has to become more involved in applied research.

Departments

Teaching: In University B the perception of change was greater in the Social Sciences and Humanities than in the Applied and Pure Sciences. In University A the direction of change was perceived as greater in the Applied Sciences and Social Sciences where there had been more of a reduction in the number of tutorials. As for lectures, in University A Social Science and Humanities both perceived there to be significantly more lecturing than other departmental groupings. Also in University A one departmental group, Social Science, saw quality to have fallen.

Research: There was only one difference between the universities and that was with respect to research quality where Social Sciences in University A perceived a greater rise than other departments.

Comment

The changes in perception of tutorial work in University B may well be associated with the need for additional support for weaker students now being recruited (see Chapters 6 and 8). In University A the direction of change for Social Science may be due to the increase in number of students being recruited and one might expect a similar result for Humanities. The increase in Applied Science may be for a similar reason. The reduction in teaching quality perceived by staff in University A may well be related to increased student numbers with no commensurate increase in staff and the reduction in the number of tutorials. The greater rise in

the quality of research perceived in University A's Social Science departments may be explained by a trade off between quality of teaching and investment in research activity. It is of interest that in both universities Humanities and Social Science staff were more likely to perceive a change in the amount of teaching and that in University B both departments saw a greater increase in lectures than other departments.

General Conclusion

We have now analysed our disaggregated data to find out whether there were any significant differences within and between sub-groups in their perceptions of changes to teaching and research. We have also compared the responses from the two universities in our sample. In order to see the overall pattern of the results they are presented in two tables. The first table presents the pattern for teaching and the second for research, support services and the quality of students. We have already commented on those cases where there was significant difference within sub-groups and we have examined those cases in which the response from the universities was different. In this concluding section we will briefly comment on the overall pattern of the results.

To take teaching first Table 1 shows that for each sub-group the pattern of responses within each of the universities was similar. If we discount those cases where the differences were close to significance for University A there are only three out of 40 cells where the differences were significant within a sub-group - 7.5 per cent of the cells. For University B there were seven cells where the differences within a sub-group were significantly different - 20 per cent of the cells. These results indicate that in both institutions the majority of staff share a common perceptions of the changes that have taken place within teaching.

Indeed, in University A the only significant differences are to be found within the departmental sub-group. However, there is less uniformity of perception of change in University B. We have already considered possible reasons for these

Table: Teaching

		Tutorial		Seminar		Lecturers		Course Level		Quality	
		A	B	A	B	A	B	A	B	A	B
Gender	P	✓	✓	✓	✓	✓	✓	✓	✓	✓	×
	D	✓	✓	✓	✓	✓	×	✓	✓	✓	✓
Year of Appt	P	✓	×	✓	×	✓	✓	✓	×	✓	✓
	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rank	P	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dept	P	✓	×	✓	×	✓	✓	✓	✓	✓	✓
	D	×	✓	✓	✓	×	✓	✓	✓	×	✓

Key: P = Perception of change

D = Direction of change

A = University A

B = University B

✓ = No significant change

× = A significant difference within sub-group

these groups). As we argue earlier we would expect the results for these two groups to be related to each other in University A, though not to the same extent in University B. Our results confirm this to be the case.

However, there remains the question of why the research results are so different between the two universities. One possible reason is that University B has always, given its history and culture, been more concerned with applied research than the more traditional University A. Thus the change to research policy by Government and research councils, encouraging more generic and wealth creating research, to which we allude in Chapter 6 will force changes on University A's staff, whilst merely reinforcing existing research activity in University B. These changes in research direction will be more obvious to staff who have been in University A longer and, as we have shown, these will also usually be in more senior posts. Although the correlation between rank and year of appointment is not so close in University B it is noteworthy that the only sub-group within which there is a significant difference is that defined by year of appointment. We discuss the reasons for this difference in the note at the end of this chapter (see Footnote 1).

If we turn to the quality of student and support services. There was only one significant difference. Most staff perceived there to have been change and the change had generally been a decline in student quality. The case for which there was a significant difference was in University A where more of the older appointments perceived there to have been a change in student quality ($p=0.006$). If there has been change in recent years one would expect older appointments to be more aware of any change than more recent appointments who may have been at the university for too short a time to have noticed change to the same degree. There was a general perception that support services had declined and a perception reinforced in the interviews reported in the next chapter.

It would appear that the factors affecting university behaviour are pushing institutions and their staff in a similar direction. And the major factor that is causing this we argue is the funding method. However, although the general pattern of response is similar there are some important differences between the universities. Funding changes do have an homogenising effect, as our model predicts, but differences between the universities prior to these funding changes mean that there will be some difference in the degree to which their behaviour is changed. Perception of the importance of these differences will depend largely on who is evaluating them. The funding agent has changed funding method in order to change university behaviour and, perhaps, to alter the shape of the university sector. Their views of the desirability of the changes taking place will almost certainly have a different perception to that of university managers, university staff and, indeed, to researchers. More important, perhaps, is whether the differences are only temporary, disappearing in the longer term as all universities are forced by the funding changes to follow similar paths, or whether they are permanent, with the gap between the elite universities, such as University A, and the rest becoming greater as the universities follow different routes to deal with the changes to the funding method employed by the funding council. This issue is addressed at greater length in our concluding chapter.

Footnote to Chapter 7

One issue that arises in our results is that on a number of occasions there is a significant difference between the results for staff categorised by rank and staff categorised by year of appointment. Intuitively one might expect the results for the two groups to be closely correlated since older appointments might also be more senior in rank. We explore this apparent contradiction in our results below.

Differences between rank and appointment in University A and University B. Although the response to most questions are similar for both rank and year of appointment there are a number of occasions when the response by rank and year of appointment differ significantly. We have noted these in the text. This difference is more pronounced for University B. We would expect the results to be similar because we would assume that there to be a close relationship between year of appointment and promotion: staff who have been in the university longer are also more likely to hold senior positions. If, however, there is not a close relationship between the two groups then differences in their responses may readily occur because we are dealing with separate, but overlapping, populations. To discover the relationship between the two group we conducted two tests. In the first we tested for correlation between the groups and in the second we carried out a chi-square test. For the first test we recoded the year of appointment group into five groups, under seven years, the second 8-14 years, the third 15-21 years, the fourth 22- 28 years and the fifth 29 years and upwards. We thus had rather better interval data for the analysis than under the previous coding scheme in which the sample was divided into only two groups. We recognise that the group defined according to rank does not provide continuous data that is desirable for correlation analysis, but the coding does provide us with discrete variables that provide a measure of scale.

Results

University A

Test 1: The correlation coefficient was - 0. 47 and the level of significance was 0.001. The correlation is of the expected sign, it is not very high, but it is highly significant. These results would suggest that we should expect the responses from the two groups to be similar, but not necessarily the same. This is very much the picture revealed in our analysis.

Test 2: The Pearson test of significance revealed the same level of significance as Test 1. This does suggest again that we would expect the results to be similar for the two groups. Inspection of the table presenting the data shows that only two cells are empty and also that a significant number of senior staff, readers and professors, have been appointed in the last seven years (nearly 20 percent). (A possible reason is head-hunting by the university in preparation for the RAE). The hypothesis of a very close relationship between the two groups is not entirely supported by these results and thus some variation in response can be expected. This is the pattern of responses that we described earlier.

University B

Test 1: The correlation coefficient was -0.054 and the level of significance 0.621. This result indicates that there is no correlation between the two groups and that any differences in the response to questions can be explained by the fact that the populations are different.

Test 2: The Pearson test revealed a significant difference ($p=0.03$) which indicates that there may well be similar responses from the two groups. However, inspection of the table of our results, in which there were only three empty cells,

shows the pattern of relationship between lecturers and year of appointment to be remarkably close to that for professors. In 60 percent of the cells the difference was less than one percent and the largest difference between cells was only six percent. It is therefore not surprising that the responses from the two groups, rank and year of appointment, are sometimes significantly different.

Chapter 8: The Interviews

Introduction

In this chapter we present and discuss the results from our interviews with senior management in the two universities in our study. We have already described the way in which the sample for interview was selected in Chapter 5. In this chapter we begin by describing the characteristics of the sample of staff interviewed and then proceed to examine their responses to the questions in our interview schedules. In presenting our findings we shall explore differences in response between interviewees, between disciplines and between the universities. We shall examine the relationship between the responses in the interviews and those from our questionnaire which we described in the previous chapter. As stated in our chapter on research design both the institutions and staff included in our study were guaranteed anonymity. Those staff interviewed were asked whether their comments could be quoted. In one case only, an interviewee from University A, were asked not to quote one part of an answer. All other staff interviewed agreed that we could quote them.

Characteristics of our Interviewees

At University A we interviewed eight members of senior management, in the case of one interviewee at pro-vice chancellor level. He was the contact at this university with whom we discussed our sample requirements and the choice of appropriate senior members of relevant committees and departments. We agreed and organised details of the sample to whom our questionnaire was to be distributed, and who were the best people to interview. Three of the people

interviewed were at pro-vice chancellor level and also head of a department. The latter were professors in psychology, physics and engineering. Four of the **other** interviewees were professors also heading departments, in languages, **history**, English and physics (a different branch of physics from the pro-vice chancellor). We thus achieved a balance across the range of disciplines which we **described** and justified in the chapter presenting the research design. In addition, **we** interviewed a senior administrator responsible for developing and **implementing** the internal resource allocation model at the university.

At University B we also interviewed seven senior staff and, as with the **person** facilitating our arrangements at University A, our facilitator at University **B** was interviewed on a number of occasions. (Originally we were scheduled to interview eight senior staff but due to illness one, an engineer, was unable to attend the interview). Of the seven interviewed two were at pro-vice chancellor level, one responsible for administration and the other was also the head of an engineering department. The remaining five interviewees were all professors and heads of departments. The range of disciplines was similar to the sample in University A in that they were in the fields of English, languages, sociology, sciences and engineering (2). The fact that the balance of subjects is so **similar** will enable us to investigate whether differences exist across subjects as **well** as between institutions.

Organisation and Length of Interviews

In the case of University A after agreeing the numbers to be interviewed and the range of areas to be covered with our contact, we arranged the time of the interviews with the individuals themselves. The interviews took place over a period of four weeks, apart from the interview with the administrator which took

place some months earlier. The length of the interviews ranged from eighty minutes to two hours. In the case of University B, after agreeing the sample with our facilitator at the institution, the interviews were arranged by him to take place over a three day period. In the event one of the interviews was cancelled because of ill health and it was not possible to find a replacement in the time available. The cancellation did not bias our results because he was an engineer and we already had two engineers in the study. In the interviews with the engineers in our sample we were assured that the responses that we would have received in the cancelled appointment would not have differed markedly from those they gave. The length of the interviews varied from 65 minutes to a little over two hours. In all interviews we asked if we could return if necessary to clarify or elaborate any points of confusion or detail that might arise in our writing up. In the event there was no need to return since the only minor points that arose were answered over the telephone.

In describing and discussing the interviews we will separate the interview with the administrators from those with academic staff. The questions asked of the administration staff concerned details of the internal allocation procedures and the reasons that such arrangements had been introduced. While academics also commented on reasons for policy in our interviews with them the focus was more on the effect of policy on their departmental activities and on the institution as a whole, and whether the policy was institutionally or governmentally determined.

Interview With Administrators

The questions asked are given in Appendix 4.

At University A three people were interviewed who were explicitly concerned with institutional policy. They all stated categorically that the way in which

resources were allocated was designed to try to maximise the income that the university received from the funding council, subject to this not clashing with any powerful political or academic interest. One example of such a clash was one department, whose work was seen as important to the prestige of the university, and which was supported over and above its "rightful" entitlement under the internal allocation formula, the Resource Centre Model (RCM). However, this type of support was exceptional and the only other occasion on which there was deviation from the formula was where a department/cost centre could demonstrate that such support would only be temporary. An example of this would be the appointing of a professor who, although placing the department temporarily in debt, was expected to bring in large research contracts and research students in the near future. The university had pursued this policy on a number of occasions.

With respect to the allocation formula, the RCM, we were told that it had not been introduced until three years after the first RAE. But, although it had not been introduced earlier, the management of the university had from 1986 been allocating resources, including encouraging early retirement and blocking recruitment, in accordance with their perceptions of how the funding council's formula was operating. Since the new model of allocating resources was introduced there have been minor adjustments, principally to 'fine tune' the model to ensure that it 'apes' (the administrator's phrase) even more effectively the funding council's model. This fine tuning continued as the council's model changed and as management understood the model better.

The intention of University A was to continue with an allocation model based on a system of reward and punishment that forces departments and their staff to pursue activities with respect to student recruitment, teaching and research that will maximise the university's income from the funding council. With respect to the university's expectation that funding will be increasingly tied to teaching quality,

as well as research quality and student numbers, it recently (1992) established a Teaching Committee chaired by a senior vice-provost. This committee is concerned to ensure that the university not only satisfies the current needs of the quality assurance and audit bodies but also promotes 'good teaching'. Two ways in which teaching quality is to be promoted is first through the establishment of a Centre for Higher Education Development which was set up to coordinate all student support schemes, for example, through providing teaching aids and developing electronic support for library users. The second example of how teaching quality is to be improved is through the development of teaching assessment procedures. Peer observation is to be used. The 'observers' are volunteers who have attended an internal course on teacher observation and through 'informed interaction between observer and observed' quality will be enhanced. All these quality developments have taken place to ensure that the university will have no department whose funding is threatened because it is deemed 'unsatisfactory' in any teaching quality assessment exercise and because of the opportunity, if deemed 'excellent', to receive additional funding to disseminate 'good practice' to other institutions.

In the longer term the university expects teaching quality (TQ) to be more systematically linked to funding and when it is the procedures now being set in place should guarantee that the university will be highly rated and well funded. (One issue that the university might consider is how much the administration of this scheme is to cost and how this relates to its benefits, whether measured in terms of educational quality or finance (increased grant). The costs are not only direct, the monetary costs of setting up these procedures, but also indirect since the resources could otherwise have been used to support research and teaching had they not been allocated to support teaching audit and assessment. This 'opportunity cost' was certainly noted by many of the staff in their questionnaire responses when they expressed concern at the huge growth of administration,

much of it to do with quality assurance and much, in their view, involving the use of scarce research time with little benefit to teaching.)

The situation in University B was somewhat different from that of University A. At this university I spoke to two staff who were central to determining and implementing internal allocation procedures. They said that the university had only introduced an allocation formula explicitly based on the funding council's formula in 1992. The slow pace of change was put down to two causes. The first was that the university was still, in the mid eighties, adjusting to the massive cuts in grant imposed in the 1981 expenditure review by the UGC. Under this exercise the institution had experienced a cut of some 30 percent in council income and this required restructuring of activities, organisation and staff. This took up most of senior management's time into the mid-eighties and beyond. The second cause of delay in responding to the changed funding method was changes in top management, where the vice chancellor was replaced and concomitant changes in the senior management personnel and structure occurred. Some of these changes, however, were informed by the perceived need to adjust to the change in funding method used by the funding council. In addition to the above causes of delay, discussions of mergers with other institutions were initiated in the late eighties and culminated in a merger taking place in the nineties. This merger was also in response to the perceived vulnerability of the institution to the changes in funding and to the increasing competition within the university sector.

Although an internal allocation formula modelled on the funding council's was not introduced until the early nineties staff at University B, particularly administrative and senior staff, had been informed at committees and general meetings of the two major ways that the institution could increase income from the funding council: raising its research rating and/or recruiting more students. Staff had been told that they were expected to contribute to both. The university

had also taken other action. To improve its research rating, promotions and appointments were more specifically related to the proven and potential ability of staff to attract research income and to publish. Academics were encouraged to move towards research council type research rather than towards industrial based contracts which were perceived as of lower value in the research ratings, even though the government and council rhetoric was about 'wealth creating' research. In the event this switch in emphasis proved largely unsuccessful because both staff and the university infrastructure were more relevant to local industry and commercial needs. Although no compulsory redundancies were made at University B, staff who were seen as not contributing to either research or teaching and student recruitment were targeted for voluntary redundancy and early retirement. As a result of this policy and the previously reported reaction to the cuts in the early eighties, over 40 percent of staff left in the eighties. Where new staff were appointed they were usually recruited to different areas from those who had left; areas considered to be likely to generate research income and/or student recruitment.

Another policy pursued by University B was to attempt to boost student numbers. Student recruitment was promoted by increased marketing efforts by the university as a whole and by individual departments. To encourage departments to recruit more students the departmental grant was more closely related to student numbers than hitherto. (Unfortunately, the staff interviewed were not prepared/able to give me documentary evidence of the actual changes). Another policy change dictated by the need to improve research rating in the next RAE (1996) was a complete restructuring of the research base at the university through the introduction of research institutes to which the university allocated the 'active' researchers in the university. (In the event this policy appears to have been successful in terms of the university's ratings as they were much higher in the recent 1996 RAE than in previous RAEs.).

Although University B did not introduce an internal allocation model based on that of the research council's until the beginning of the nineties we were assured in the interviews with the senior administrator and senior staff that internal policies towards departmental allocation and staffing had been dominated by management's perception of the working of the funding council's allocation formula. This view was reinforced, as we showed earlier in chapter 6, in the responses staff made to the open-ended questions in our questionnaire and in the responses in the interviews reported below.

Interviews With Senior Academics

In this section we will examine the views of senior academic staff. We will proceed in two stages. In the first we will use the data collected in the interviews to see how they relate to the results from the questionnaires given to staff at the two universities. The questionnaires showed how research and teaching were perceived by staff to have changed. The interviews will reveal whether these perceptions are shared by senior staff and will also help to explain the reason for the changes described. In the second stage we will address the particular questions asked in the interview schedule. This analysis will necessarily overlap at some points with the earlier analysis and where this is the case the discussion will be brief. In both stages of this section the analysis will also be concerned with any differences that there may be between senior staff and, if such differences do emerge, discussion of possible reasons will be offered. We will consider University A and then University B. Differences /similarities between the universities will be commented on at the end of each of the stages.

Questionnaire Results

The questionnaire elicited information from respondents about changes to research, teaching, support services and the quality of students. (The questionnaire is given in Appendix 3). In the interviews with senior staff we asked their perception of changes to the university and their department and what were the reasons for these changes. We also asked whether the results from the analysis of the questionnaire returns accorded with their own experience. We were thus provided with an opportunity to cross check our results and also to gain insights into the reasons for the changes that had taken place. We were also able to obtain information about subtler changes that had taken place; changes that could not be obtained through the questionnaire. We shall discuss the results of our interviews in the order in which the questions were asked in the questionnaire and we shall consider University A and then University B.

Research

The first question about research asked respondents whether the amount of time they spent on research had changed. Our questionnaire results for University A revealed that most staff considered that they were spending less time on research and that where this was the case it was because they had more teaching responsibilities and administrative responsibilities. However, none of the interviewees stated that there had been either a decline in their own research or in that of their staff. Indeed, all emphasised that they were pursuing policies to recruit staff active in research and that they were adopting policies that would support existing staff in their research endeavours through making more time available for them to do research. The policies to support research included encouraging staff to take sabbaticals to do research and produce publishable

articles, putting pressure on staff to produce publications; 'reducing the teaching burden on the best researchers'; and the establishment of teams under group leaders to support collaborative research and to assist those whose research record is 'weak'.

All those interviewed commented on the increase in student numbers and the increase in the student:staff ratio. All also commented on the huge increase in administration. A mixture of reasons was given for the increase in administration, but common to all were the following: more students to look after with a decline in support staff to help; increase in form filling for the central administration, both for research and teaching and for teaching 'quality' exercises; a greater burden of completing research applications (with an increased probability of rejection) and helping junior staff with their research applications.

At University B all the senior staff interviewed stated that the time available for research had fallen. This is consistent with our questionnaire results in which 57 percent considered time spent on research to have fallen, with only 21 percent perceiving it to have risen. The least dramatic comment on the change in time available for research was made by the professor of English who said that the time for research was a 'bit squeezed'. The rest all regarded time for research as falling as teaching and administration responsibilities rose.

The second research question concerned changes to the type of research that staff were undertaking. The questionnaire results showed that 31 percent of staff in University A perceived there to have been a change in the type of research that they undertook and where there had been change it had been towards more applied research at the expense of basic, and what we have labelled 'personal' research. Of the six professors interviewed only one, a humanities professor, said there had been no change. All research in his subject, history, was basic. This is not a

surprising statement given the nature of historical research, but it was perhaps unexpected that both the social scientist and the language professors did perceive a shift in the type of research in their fields and, for the social scientist, it was in the same direction and for the same reasons as those given by the engineering and science professors. The shift they argued was towards applied work in accordance with Government and research council promotion and support for 'wealth creating' and 'generic' research.

For the language professor the shift in the type of research undertaken was rather more invidious in that he perceived there to have been a change in terms of quality. The need to satisfy the requirements of the RAE and the time constraints resulting from the increased teaching and administration load had together adversely affected the quality of research and publications. The absence of adequate time meant that 'the life of the mind' was suffering and there was no time to talk to colleagues. As a consequence of both, the quality of thinking and writing was adversely affected, he averred. The need to satisfy the requirements of the RAE meant that staff were writing 'meta papers' rather than the long and thoroughly researched tomes more familiar in the humanities. 'Little papers are not appropriate in the Arts' and, more worrying, the work being encouraged is 'early functionalism rather than well thought through ideas'. These are similar comments to some of the views discussed in chapter 4. If these views do indeed reflect the changes being forced on the nature of research and publishing in the Arts then the policy makers have to decide whether this is desirable or not. If not, then consideration would have to be given to designing research assessment procedures for the arts that are different from those for the sciences. The fact that none of the scientists or social scientists made this point indicates that, although they may have reservations about the RAE, they do not see it as distorting and damaging research in such a fundamental fashion as in the Arts.

At University B, 34 percent of questionnaire respondents stated that the type of research they undertook had changed since 1986. Of those interviewed, three said that the type of research that they undertook had not changed as a result of changes to the university funding method, or since 1986. The Modern Languages professor, however, did express some concern and for similar reasons to the language professor in University A. He stated that the RAE discouraged long term projects and that he would not now be prepared to embark on a seven year research project as he had six years previously. He also felt that the exercise was distorting the way that research was being disseminated: short articles rather than books and that this resulted in less fully developed work. Again a similar point to some made in chapter 4. The two engineering professors both considered that the RAE was affecting the type of research undertaken, though with slight differences in emphasis. The first commented on the fact that the more prestigious research was seen by RAE panels as research council research and this had the effect of moving away from industry-based research for which his university was particularly suited. The second professor endorsed this view with the comment that although applied research was being encouraged by the funding council there was 'inadequate recognition of industry based research'. Clearly both professors were pointing to an apparent contradiction in the policy of encouraging 'wealth creating' research: applied research was good, but industry based applied research was less well regarded by research panels than other forms of applied research.

The final research question concerned staff perceptions of changes to the quality of research. The analysis of the staff questionnaire results for University A revealed that only 18 percent of respondents perceived the quality of research to have fallen, despite the reduction in time that was available to do research. The interviewees were for the most part less sanguine. Their views on the quality of research can be divided into the positive, which are principally concerned with staff changes, and negative, which are to do with the effect on research of teaching

and administrative responsibilities. The staffing change that was said to have led to enhancement of quality was that non-productive academics had been encouraged to leave through early retirement or voluntary redundancy and they were replaced, for the most part, with younger, more enthusiastic research active staff. Although the new appointments may have the potential to be more productive researchers, with the quality of research at the university consequently rising, this may not necessarily occur because 'young staff are under so much pressure to secure research grants, to publish, to satisfy the quality assurance procedures, to teach increasing numbers of students, that 'scholarship' has certainly suffered'. The attitude to 'non-productive' academics is encapsulated in quotes such as 'shouldn't reward a dead horse by flogging it' and 'can't rescue non-productive researchers'. (This interviewee, a pro-Vice Chancellor and engineering professor, did not define 'non-productive', but, as other interviewees claim, clearly some were being 'rescued' by the support of team leaders and provision of study leave). The justification for encouraging the departure of the less productive researchers was the RAE exercise itself- 'through research exercise in 1992 we got rid of dead wood'. However, not all staff deemed to be research - inactive left the university. 'Weak' staff were sometimes kept on and redeployed as 'safety' officers, careers officers or assistants to these posts. In this way they could continue to teach, but were not counted as inactive researchers in the RAE. By understanding the rules of the RAE such cost centres could include in their submissions for the exercise all, or nearly all, of their academic staff in the exercise.

The picture from the questionnaires at University B was that 43 percent thought that research quality had risen and only 13 percent that it had fallen. The responses from the professors interviewed was more mixed, with the majority of professors considering that the quality of research may have fallen, or was in imminent danger of doing so. Some of the reasons given for concern about

research quality were the same as in University A, with particular emphasis being given to the pressure to teach leaving less time available to devote to research with deleterious effects on its quality. The one professor (of Sociology) who thought that the quality of research had not fallen said it was because 'we're all working barmy hours'. He still had some misgivings about the future quality of research because of the increased division between teaching and research. This division was being encouraged internally at University B by the establishment of research centres separate from teaching departments and externally through the RAE, which increasingly redistributed research money to a limited number of institutions and cost centres. If, as he believed, research and teaching are complementary, any separation of the two would adversely affect both. This same point was made by two other professors who also added that as a result of the planned merger with a tertiary college which did very little research, this distinction between staff doing research and teaching would be reinforced to the detriment of both. The merger itself was taking place so that the university was more secure financially. It would appear that funding, though this time it was as much to with the quantity as with the method of funding, was the factor determining university behaviour.

At the same time as expressing concern about the influences that were seen as detrimental to research comment was also made about countervailing pressures that were seen as raising research quality. For example, the establishment of research centres, in order to improve rating in the RAE, was said to enhance research because it would now be 'more focused' and the centres provided a 'critical mass' that was not previously available in many departments.

Teaching

In this section we will discuss what interviewees said about teaching, support services and the quality of students.

The first question on teaching asked respondents about the time that they spent on it. At University A the questionnaires revealed that most staff perceived time spent on teaching to have risen or, at best, to have remained the same. The percentage of staff perceiving time spent on tutorials, seminars and lectures to have risen were respectively 53 percent, 35 percent and 49 percent. The percentage perceiving a fall were respectively 18 percent, nine percent and 15 percent. All the senior staff interviewed stated that all types of teaching had increased in recent years. The main reason given for this was the increase in student numbers which, coupled with little or no increase in staff numbers, had resulted in a decline in the staff:student ratio. The increase in student numbers meant staff had to spend more time preparing, marking and then delivering through tutorials, seminars and lectures. The other main reason for the increased teaching load, mentioned by three of those interviewed, was the greater need for remedial teaching (and this from an elite university!). It was also claimed that many of the students now being recruited did not have the same academic skills as formerly and in consequence required additional tutorial support 'more small group teaching for remedial students'. One interviewee, an engineer, stated that an increase in the duration of the engineering course from three to four years was partly in response to the need to provide less qualified students with additional teaching support. Interestingly, neither of the humanities professors seemed as concerned about the quality of students, perhaps because demand for their courses was more buoyant and they could still select high calibre A level students.

All of the staff interviewed at University B stated that their teaching load had increased for all types and levels of teaching. This is similar to the questionnaire returns which showed that for tutorials, seminars and lectures 59, 18 and 57 percent respectively thought that there had been an increase. The respective figures for a decline were 17, 11 and 15 percent. The principal reasons given for the increase were the same as University A: a large increase in student numbers without any increase in staffing. In absolute terms the greatest increase in student numbers was said to be at undergraduate level, with staff claiming that it had gone up four or even fivefold since 1986.

The next question on teaching concerned staff perceptions of changes in the quality of teaching. Despite the decline in staff:student ratios our questionnaire revealed that 45 percent of staff in University A thought that the quality of teaching had risen, whereas only 20 percent considered that it had fallen. Three of the interviewees commented on the quality of teaching. The first, an engineer, thought that quality may have suffered because of the difficulties created by having much greater teaching loads than previously, although staff 'were making heroic efforts to prevent this (decline in standards)'. The second, a scientist, merely commented that although assessment mechanisms had been introduced and appeared to indicate a rise in quality, they were really 'too coarse a measure' to indicate anything about quality. His own view was that the quality of some courses may have been adversely affected by the large increase in student numbers. Another interviewee, from the humanities, commented on quality within a more general university context: 'everybody feels more political and harder pressed and unable to deliver the same quality of support' (to colleagues and students).

The views above contrast with those expressed by the fifth interviewee (from science) who stated that the procedures developed to improve quality had

definitely had a positive effect. (His view may not be entirely impartial as this professor was responsible for teaching quality at the university!). Measures taken to enhance teaching quality included: setting up activities to support the development of communication skills, using 'observers' to assess teachers and then through 'informed interaction between observer and observed' to promote good practice (though he did concede that the time available to do this was very limited), the establishment of a Teaching Committee in every department and the development of student questionnaires to assess teaching. Other interviewees stated that they never analysed the student questionnaires, 'no time', and 'consigned them to the bin' and that the Teaching Committees were merely window dressing that diverted attention from research and meaningful interactions between staff. On the basis of these divergent views one can only conclude that the picture concerning quality is unclear, as is so often the case with attempts to assess and audit teaching.

At University B similar percentages of questionnaire respondents to those in University A perceived teaching quality to have risen, remained the same and to have fallen: respectively 44, 39 and 17 percent. However the pattern of responses from senior staff interviewed was somewhat different: the quality of teaching was perceived by three to have fallen. The sociology professor said 'teaching standards are down' and that there was now less tutorial work with students. Tutorials had, in part, been substituted by 'student centred learning' a 'buzz' phrase to describe students having to work on their own because there were not enough staff to provide adequate teaching support. This professor also commented on the detrimental effect of the semester arrangements 'it does not make pedagogical sense to have four weeks off just before the end of a semester'. This concern with the adverse effect of semesterisation (and modularisation) was echoed by three other professors. The electronics engineer professor did consider that some benefits had derived from the semestered/modularised courses in that

they were now better organised and there was more and better documentation but 'there is still over-teaching'.

Another, perhaps subtler concern about teaching and how it had changed was made by the senior engineer who said that 'the real area that has suffered is small group work' and as a result the 'British system was losing its distinctive feature and one which encouraged a high retention rate'. If this is indeed the case it means that our university system may be becoming more like the continental and North American systems and it may mean that the cost per graduate will rise, as many may now not complete as quickly as before, if at all. It may also mean that in the competition for overseas students two advantages that the UK was perceived to have, individual attention to students and high completion rates, is lost and this may well have an adverse effect on overseas recruitment. If this is the case then not only will institutional finances suffer but so will the economy, education and culture generally if, as has been argued by Williams (1981) and Mace (1987), there is a net positive gain from having overseas students studying in the UK.

The questionnaire also asked staff whether the changes in teaching affected all levels of course. The questionnaire results for University A reveal that most staff perceived teaching of all courses from undergraduate to postgraduate to have risen. This is hardly surprising given the increase in recruitment of students. All of the staff interviewed confirmed that this was indeed the case. Two of them stated that new courses had been designed to attract more students; both of these changes were at the masters level. Only one professor said that there had been any change in teaching method, and that had been the introduction of a modular course to cater for students who were being seconded from industry for limited periods of time.

At University B all the professors except the biologist commented on the change in teaching method/organisation: the move to a modularised system and to semesters. We comment above on the effect that this is said to have on teaching quality. Semesters had also affected the vacation time available to staff for research and leisure. The professor of Modern Languages said modularisation had resulted in more teaching, preparation and marking, even though individual assignments were shorter, which also encroached on the vacation time available for research. It is of interest that two of the professors, (Sociology and Modern Languages), commented that the changes in teaching method were designed to attract more students to the universities. The Modern Languages professor said that this followed from the fact that modularisation enabled standardisation of courses and transfer between HE institutions. However, this change in teaching arrangements did not affect the 'elite' institutions according to the Sociologist because 'they did not need to bugger about with their teaching to attract students'. Bernstein, anticipated that this type of difference between elite and other universities would develop (Bernstein 1996).

Research and teaching are both affected by the availability of support services and the questionnaire asks staff to comment on any changes to support services. At University A, 73 percent of staff perceived the quality of support, particularly library services, to have fallen. The three interviewees who commented on the quality of support all considered it to have fallen. One, an engineer, also commented on the decline in the quality of laboratory support, in terms of both the technical staff available and the equipment, a decline which he considered would eventually jeopardise the UK's position as an international leader in engineering research.

At University B every professor interviewed commented on the decline in support services, both for academics and for students. This is very much in line with the

questionnaire results which revealed that some three-quarters of staff considered there to have been a decline in support services. Particular concern was expressed on the decline in library facilities which adversely affected research, particularly in the Humanities and Social Sciences as 'the library is our laboratory' claimed the Sociologist. Science was also adversely affected for according to the Electronics professor 'the hidden infrastructure has now gone' and he has now to build his own equipment for experiments. There was general agreement that the amount of pastoral support for students had declined because of the huge increase in student numbers. This was happening at the same time as there was a perception of student quality falling (see below) which would probably mean that more attention was needed by students.

The final question concerned changes in the quality of student intake. At University A the quality of student intake was perceived to have fallen by 35 percent and to have risen by 12 percent of respondents to our questionnaire. The remainder perceived there to have been no change. Four of our interviewees commented on the decline in the quality of student. We have already mentioned above how that has affected teaching load and, in certain cases, the length of courses. Two of the professors commented on the decline in student quality as the result of a need to attract more students, even if grades were not as high as formerly, 'to get out of financial trouble'. Students now are 'less intellectually secure' and do require additional support. One interviewee, an engineer, expressed concern about the quality of new courses being offered in schools as well as concern about a change in the 'A' level curriculum - 'students did not have the depth of understanding as in the past'. The new courses he was most concerned about were those offered as part of the GNVQ that purported to provide technician skills needed by industry today. He pointed out that the narrow emphasis on 'skills' meant that when the skills became obsolete, possibly in as 'little as five years', these trainees would become unemployed or require

retraining. This professor was unwittingly reaffirming the views expressed thirty years ago in Philip Foster's seminal paper "The vocational schooling fallacy' in which Foster argues that the education system's relationship to the economy (and society) makes schools an inappropriate vehicle for the transmission of narrowly based vocational skills (Foster 1966).

At University B an even lower percentage of respondents than at University A perceived student quality to have risen (four percent) with 29 percent perceiving it to have fallen. Five of the senior staff interviewed said it had fallen and the English professor thought quality had remained the same. He added that students were often older than in previous years. The reason student quality was maintained in his department was said to be the existence of buoyant demand because of the good reputation of the English department and the courses it offered. In contrast the Sociology professor thought that students' 'articulation of ideas was dreadful' and 'their use of sentences and grammar had worsened and will continue to do so'. The explanation for this decline was said to be a worsening of education in schools, coupled with the need for the university to recruit more students (because the university needed the funding they brought) which meant accepting students with lower A level grades. The Science professor's comments were similar, 'A level scores are down because I've had to recruit more students'. He also remarked that if teaching was measured by 'value added' this might mean that University B is doing a better job than some other universities who appear to get better degree results. (This point is supported to some extent by the Johnes and Taylor study (1990) cited earlier).

Summary of Results and Similarities and Differences Within and Between Universities

Research

Research time: There was general agreement between responses to the questionnaire for University B staff and the responses from the senior staff interviewed: most perceived the time that they spent on research to have **fallen**. Similar findings emerged from the crosstabs analysis. In University A, **although** there was general agreement, as at University B, that the time available for research had fallen because of the increase in teaching and administrative loads, none of the senior staff interviewed specifically stated that the amount of time that they or their staff spent on research had fallen. This contrasts with **both** the general analysis of the questionnaire results and with the crosstab results. It is also different from the response from University B, although this might be **partly** accounted for by the greater proportionate growth in teaching load there compared to University A. It may also, in part, be explained by the lower ratings in the **RAE** at University B which could mean that they have less resources available to support research.

It is, however, difficult to account for the discrepancy between the questionnaire results from University A and the interviews with senior staff at the university. One possible explanation for differences may be that although the senior staff interviewed consider that they are making more time available for staff to do research, as they claimed in the interviews, that all this is doing is ameliorating the situation. It may not actually alter the fact that time available for research and with it time spent on research has fallen for most staff. It is more difficult to reconcile the interview of staff results with those from the crosstab analysis. The crosstab analysis showed that over 70 percent of professors perceived time spent

on research to have fallen, with 43 percent of these seeing themselves as spending 'much less' time on research. It is possible, although it would be a remarkable coincidence, that our interviewees were from the 30 percent of staff who did not think that the time spent on research had either fallen, or remained the same.

Type of research: At both universities senior staff considered that there had been a shift towards more applied research. This result is consistent with our overall findings from the analysis of the questionnaires and with the crosstab results. There was however a difference in the emphasis given to this change. At University A more senior staff commented on the change in type of research. This difference in emphasis could stem from the historical differences between the two universities. Perhaps another reason might be that University A was an elite institution with more of its staff engaged in theoretical and basic research than in University B, which as a former CAT had been more involved with applied and industry-based research.

Another difference between the universities was that at University B, comment was made about the type of applied research, applied but not industry-based applied research, that was being supported and valued by the research councils and RAE panels. No such comment was made at University A, perhaps because it is staff from the elite institutions that dominate the research councils and panels and reward the type of research in which they are themselves engaged. A point made in some of the papers reviewed in chapter 4, particularly Harley and Lee (1996). At both universities concern was expressed about the effect that the RAE was having on the short term nature of research, principally through its influence on the type of publication that it encouraged. In both institutions this concern appeared to worry Humanities staff rather more than the Science and Engineering staff.

Research quality: Our crosstab analysis and general findings from the questionnaire indicated that very few staff perceived research quality to have fallen. However, senior staff at both universities tended to be a little more concerned about how the quality of research was being threatened, particularly by the increased teaching and administrative load on academics. In both universities, but particularly in University A, the changes to staff through new recruitment and retirements were said to have enhanced research quality. This small difference between the universities with respect to how staffing changes may have enhanced the quality of research could arise because University A, being financially sounder than University B, had been able to fund more retirements of staff deemed to be poor at research and it could also afford to pay for the recruitment of 'high fliers' in research. The questionnaire results, however, suggested that although the university may be recruiting 'high fliers' in research they were requiring these same staff to bear a greater teaching burden than formerly and this would surely reduce the amount of research that they could undertake.

Senior staff at both universities gave as reasons for concern about quality the increase in teaching and administration loads and the decline in support services available. There was one significant difference: at University B most of those interviewed considered that research and teaching were complementary activities and with the increasing separation of research from teaching that was taking place at the university, research quality would suffer. No mention of the separation of teaching and research and its effect on quality was mentioned at University A. This might be because staff did not see teaching and research as complementary activities, although most of them did express the view that good researchers were also good teachers. A more plausible reason is that at University A teaching and research staff were not being separated: all academic staff were expected to teach, research and publish. If this is the case then it may be that funding changes are

increasingly bringing about a differentiation of staff within non-elite institutions that is not taking place within elite universities.

Teaching

Time on teaching: The interviews at both universities confirmed the questionnaire results in that all the senior staff interviewed commented on the increase in the number of students and their increased teaching load. Although the crosstab analysis showed there to be some differences in staff perceptions of changes to the amount of tutorials, seminars and lectures no significant differences of perception were revealed in the interviews. It emerged in the interviews that one reason why there had been an increase in tutorials and seminars was the need for more remedial support for the less well qualified students that were now being recruited. This point was made at both universities and reinforces the comments made on a number of the open ended questions in the questionnaire about the need for additional support for students who had not received adequate schooling and/or the decline in the quality of A levels. One difference between the universities with respect to student quality was that at University A concern was more about the quality of A levels having fallen, whereas in University B the concern with quality stemmed from the fact that they were recruiting more students with lower A level grades, or indeed no A levels at all, than formerly.

The quality of teaching and the method of teaching: The crosstabs and questionnaires indicated that most staff perceived quality to have risen, although there were a significant number who thought it had fallen. The senior staff in both universities were rather more pessimistic about how the quality of teaching had changed in that most thought it had fallen. Only one professor at University A considered teaching quality to have risen, the rest who commented on quality thought it had fallen. The principal cause for the fall in quality was said to be the

increase in teaching load on academics, coupled with the decline in support services for students and staff. At University B all staff, five, who commented on quality thought it had declined. Although they gave similar reasons to University A, some staff also considered that the introduction of a modularised and semestered degree structure had contributed to the decline in teaching quality. The change in the organisation of teaching was a significant difference between the universities and is another example of the differentiation that appears to be taking place between elite and non-elite universities to which we have already alluded. As we argued earlier this differentiation is being driven by the greater need of University B to attract and retain students through more flexible teaching programmes.

Support services: All the senior staff interviewed were unequivocal in claiming that support in the form of libraries, laboratories and clerical and technical staff had fallen. This supports the results from the questionnaires and crosstabs.

Student quality: We have already mentioned this with respect to the need for additional teaching support because students were no longer as well qualified as previously. The questionnaire results suggest that in both universities quality of student was perceived by more staff to have fallen than to have risen and that the differences between the universities were slight. The interviews with the senior staff suggest that there is significantly more concern about student quality at University B which appears to result from its need to recruit students whether adequately qualified or not. Concern about quality also appeared to differ across subjects. At University A there appeared to be more concern expressed by the science and engineering staff than the social scientist and Humanities professor. At University B only one professor, of English, did not think that student quality had fallen.

Conclusion: Our interviews at the two universities generally support the findings from our questionnaires. They also provided some insight into the reasons for our questionnaire results: the results for the most part have been caused either directly or indirectly by recent funding changes, and particularly the development of the RAE. The interviews also suggested that the effect of the changes to funding, though in many ways having similar effects on the two universities, may at the same time be bringing about increased differentiation between them with respect to the time available to do research and the quality of research and teaching. For all three more adverse effects seemed to be experienced at University B than University A.

Senior Academic Staff: Response to the Interview Schedule

The interview schedule was designed to discover whether senior staff in the two universities agreed with the results from our analysis of the questionnaires and gain further insights into their perception of the changes that had taken place in their universities. (The interview schedule is given in Appendix 4). A fuller elaboration of purpose of the interviews is presented in Chapter 5 on research design. In presenting the responses to the questions we will give those for University A first. As stated at the beginning of this chapter there is some overlap with the previous section.

In response to the first question concerning the major changes departments had confronted since 1986 all staff at University A made reference to the increase in the numbers of students and the failure of staff numbers to keep pace with this rise. Mention was also made by most of those interviewed of the increase in administrative responsibilities. The reasons for this increase included the RAE and the various QA developments, both for internal and external purposes - 'HEFCE's constant demands for information in order to justify the university's

grant'. There were references to the extra administration associated with the increase in student numbers.

One change, mentioned by three of those interviewed, was a change in the type of staff at the University. As the social scientist put it, 'unproductive' members of staff had left to be replaced by better teachers and researchers. The reason for staff leaving was claimed as staff 'becoming more introspective'. This introspection led to them recognising that they were making an inadequate contribution to the department and that therefore they should leave, with a generous redundancy package. The same professor claimed that there had been no pressure on staff to leave, either from him 'no pressure from me' or the university. However, although this may have been the case in his department it did not appear to be the position in other departments. One of the Physics professors interviewed, as noted earlier, stated that 'the RAE had provided an opportunity to 'get rid of dead wood'. This indicated a rather more active role in encouraging the early departure of staff. The social science professor claimed that as a result of the changes to staff in his department there had been a change in 'ethos' within the department. All staff were now working towards similar goals: 'providing good teaching and being active in research and publishing'.

At University B senior staff also claimed that there had been a significant increase in student numbers without a commensurate increase in the number of staff and that generally both the staff:student ratio has declined as had the unit of resource per student. In one department, Modern Languages, the student:staff ratio had declined from 10:1 in 1986 to 30:1 in 1995/6. In another department, electronic engineering, the number of staff had been cut from 40 to 20 in the last eight years whilst the number of students had remained the same. There was also comment on the funding changes and the effect this had on policy toward student recruitment and the attitude towards research, which was seen as even more

critical to advancement than prior to the funding changes. One major difference between the universities was that staff at University B also noted the change in teaching that had occurred as a result of modularisation and semestering of teaching. Although these are not intrinsically or logically related to each other the fact that they had occurred at the same time in the University appeared to result in staff treating them as one and the same in their effects on teaching at the university. One other difference between the universities was that staff at University B referred to the development of research centres at their university. These research centres were to become the focus of research and would recruit the 'best researchers' from departments so as to provide a 'critical mass' for research activity a point commented on earlier.

When senior staff at University A were asked about the cause of the changes all the interviewees stated that the reason for the change were to do with funding changes. Some stated that it was to do with the internal allocation formula, the Resource Centre Model (RCM). (This model is based on the funding council's funding model.). Other senior staff said that it was to do with maintaining the (financial)'viability' of the department or ensuring that their department secured a five in the next RAE. The professor of German summarised the reasons in such phrases as 'we're being monitored (RAE and QA) into the bloody ground'. The results of monitoring determined departmental income, hence the need to research and publish and to recruit students 'students are recruited to get out of financial trouble'. If these responses reflect the general perception of staff at the university they support our central hypothesis that it is the changes to the funding method that is the principal factor explaining changes to institutional and individual behaviour. These changes include changes: to internal allocation procedures, to the number and quality of students recruited, the teaching load on staff, the administrative load on staff, the research activity of staff and the way in which the research is disseminated.

All senior staff interviewed in University B stated that the principal influence bringing about these changes was funding and the RAE. The modern languages professor encapsulated this view when he stated that funding is 'driving everything'. Professors differed in their views as to the most important effects of funding changes. For example, the Modern Languages professor thought the major influence was the coming RAE (and previous RAEs?). When he stated that 'Everything is focused on March 1996'. This meant that all policy, whether to do with recruitment, research, publication or sacking was being determined by how they would affect cost centres/research centres rating. Other effects such as modularisation and semestering were also a matter of comment. The fact that neither change to the way teaching is organised had taken place at University A suggests an important difference between the universities in their response to funding changes. Another difference was the importance of the 'market' for students and its effect on policy. For University B staff the competition in the market for students was said to be the 'new' universities which was one reason for the introduction of modularisation. At University A, although partly concerned with attracting students, the 'market' with which they were principally interested in was in research: the competition with other elite institutions to attain high ratings in the RAE. University B staff, though concerned with the RAE as the development of the research centres indicates, gave rather more emphasis to attracting students and the funding that follows, than to research which was perceived by a number of staff as becoming marginalised. (See earlier discussion p163).

When asked whether the changes had been beneficial, all staff interviewed at University A perceived some benefits from the changes, the two most common being the effect on teaching and research and the greater understanding of how resources were allocated. Research and teaching were said to be more 'focused' than previously, 'laxity' in the system had been reduced, post-graduate teaching

has been 'too casual before'. With respect to understanding how resources are allocated, all those interviewed claimed that there was now 'more transparency' in the system of resource allocation within the university (through the RCM). This enabled departments to recognise and react to perceived inequities in their treatment and to behave in ways that would increase their allocations.

There was general concern, however, that teaching and research might suffer as the teaching and the administrative load increased. The latter point was emphasised much more than the former as damaging to the life of the university. As the professor of History stated, administration 'obtrudes much more in our lives' and 'the universal picture is one in which we spend more time on administration than teaching, research, or our own work'. The same professor was also concerned about the 'disempowerment of staff' as a result of the necessity of complying with the requirements to do more teaching, engage in a particular type of research (based on a science, rather than a humanities model), and to fill in all the forms associated with the RAE and QA, both externally and internally generated.

We have mentioned earlier the concern that University staff expressed about the type of research that they were now forced to do and the adverse effects, particularly in the Humanities, that this was said to have on the nature of research being undertaken and on the way it is disseminated. We have also discussed the effect that the changes to funding may have had on teaching. One view, again expressed succinctly by the History professor and quoted earlier was that 'Everybody feels more political and harder pressed and unable to deliver the same quality of support (to students and colleagues) as formerly'. The picture from the analysis of the questionnaires, though generally indicating that respondents considered quality to have risen, also showed that a significant minority thought quality had fallen.

The views of staff at University B about the changes to teaching that had taken place were generally less favourable than at University A. The modularisation programme was generally seen as inimical to good teaching. The 'indiscriminate' loss of staff to satisfy financial imperatives often undermined both teaching and research according to the Modern Languages professor. The reduction in staff:student ratios meant that less attention could be given to individual students. At the same time the huge increase in student numbers reduced the time available for research. The pressure on time available for research was increased by the increase in administration associated with more students, QA and RAE. As the Sociology professor put it 'the only way to maintain your research is to do it in your spare time' which meant 'doing research at night and at weekends'. The development of research centres was seen as good for research and for those staff in the centres, but bad for other staff whose research would become marginalised. The separation of research and teaching was seen by all senior staff as having adverse effects on both, and this separation would be exacerbated by the merger with the local tertiary college. The most extreme view when describing the changes at University B was that they were 'an unmitigated disaster'. Generally staff were concerned that the changes taking place were bad for research and teaching and that the role of a university, or at least University B, as a place 'to create and disseminate knowledge' was under threat. There appeared to be more concern at University B than the 'elite' university A, about the threat to the nature of the university's research and teaching.

When asked more specifically to comment on the changes for teaching, research and administration, all staff at University A remarked on the huge increase in teaching load. There was less agreement among the senior staff about the changes in the quality of teaching, with as many perceiving it to have risen as to have fallen. In contrast to University B there was general agreement that there had been no significant change to the methods of teaching the traditional

undergraduate or masters courses. Although the amount of tutorial help was said to have risen by one scientist and one Arts professor, both said it was to do with the need for some additional support for less well prepared student intake

When asked about the effects of the funding changes on research all the interviewees at University A commented on the greatly increased pressure to do research and publish. This pressure was largely attributed to the RAE, although it was also claimed by most of the professors that to 'get on' at University A staff had always been required to research and publish. We have already commented on the views of staff that the quality of research had been maintained, but that with the increasing pressures of teaching and administration, coupled in engineering with a decline in support services and equipment, that quality was likely to be adversely affected in the longer term. We have already quoted the History professor comments on the pernicious effect of the RAE panels who wanted 'technical and narrow minded research' and that their need for a number of publications rather than 'one great book was resulting in chapters in books being turned into articles, with the book itself being put on the 'back burner', probably never to be finished'. The same professor also commented on the growth of administrative load and how it 'obtrudes much more in our lives'. This was affecting teaching and research: 'The universal picture is one in which we spend more time on administration than teaching or research or our own work'. This view of the intrusion of administration was commented on by the engineers and scientists also, with one engineering professor describing how QA had required him distribute and collect 5000 student questionnaires (for different courses), each with 10 questions on them. He had inadequate time to process them 'they were not machine readable' and the results were therefore never analysed the 'whole time consuming exercise was purposeless'.

At University B there was unanimous agreement that there had been enormous increases in both administration and teaching and that the increase in both was making it very difficult to maintain research output as previously. We have already commented on the effect that changes were said to have on the quality of teaching and research so we will only briefly repeat them. The general view was that the quality of teaching was being adversely affected and that these adverse effects may not be reflected in changes in the degree results. As one professor of Engineering said, 'courses are tailored down to student ability' and that 'there has been a decline in the quality of firsts'. If this is indeed the case then the present and previous governments' concern about degree standards may be justified.

Views about research in University B were that it was being adversely affected because of the pressure on staff time. The only way to maintain research output was to work longer hours. Different views were expressed as to whether the type of research undertaken had changed as a result of funding changing; the science and engineering professors appear to be more conscious of the pressure to change. The one development that was felt likely to enhance research was the development of research centres which provided a 'critical mass' of researchers and moreover by being bigger, research units were likely to result in higher research ratings. As one of the engineering professors stated 'there is a strong correlation between size and rating in the RAE' - a point made in some of the critiques of the exercise discussed in Chapter 4.

The response to the question as to the effects on staffing has already received some attention earlier. However, a number of additional points to those already reported were also made in response to this question. The most influential factors affecting staffing policy, recruitment, promotion and retention, was claimed to be the RAE and, to a lesser extent, the QA. Mention was also made of the effect of the changes to internal allocation procedures (the RCM), themselves a result of

the RAE, and the changes in the university funding formula. However, there did appear to be departmental differences in the pace and pressure placed on staff to leave. The History professor stated that in his department the less productive staff who had not responded to the additional internal support to assist them in their writing and research would be targeted before the next RAE. The other interviewees seemed to have been already active in 'disposing' of or redeploying 'inactive' staff. In one science department instead of forcing staff to leave, particularly those who were 'good teachers', they had transferred them to administrative positions, such as Safety Officer, where they could contribute to the teaching of the department, but would not be included in the RAE. This policy, as we stated earlier, enabled the department to appear to have a higher proportion of research active staff than would otherwise have been the case!

The view, made explicit in a number of the interviews, was that University A needed good researchers and that this did not present any problem for teaching as 'staff who are good are good at both teaching and research'. However, it was also made clear that where there was any possibility of conflict between the interests of teaching and research, research would win. As the social science professor admitted, when the university made a recent professorial appointment in his department it was merely fortuitous that 'he also happened to be an excellent teacher'. There was some evidence that the university had actively head hunted in both the sciences and social science areas. The university had also lost staff who had been head hunted, particularly by Cambridge University, another elite institution.

At University B there were some differences from University A in how senior staff perceived staffing to have changed. One difference, noted by three of the professors (Sociology, Languages and Engineering) was that more work was now being undertaken by staff who were part-time and on temporary contracts.

As the Sociology professor, who again provided the most quotable response, said, 'a second academic workforce is being created whose employment is contingent on demand. These 'ghettoised workers' have no commitment to subject, department or institution and are less available to students', all of which adversely affects teaching. This point is somewhat similar to that made by Waigh when he refers to a 'caste' system developing. All said that there was now more careful targeting of recruits with research potential. This was given particular emphasis by the Science professor who stated that the University needed staff with a proven 'track record in research', 'gone are the days when we can recruit for potential' and, to emphasise the point, 'post docs now have nil chance of recruitment'. This recruitment policy helps to explain the somewhat skewed age distribution of staff at the university. This is also partly explained by the fact that staff in some, but not all, departments had been encouraged to take early retirement if they were not research active. Although the Modern Languages professor said, 'there is no room for passengers any more' there was a problem pointed out by one of the Engineering professors, who also held a very senior management position: funds were so limited that the University could not always afford to get rid of staff that were 'research inactive' and, by the same token, was limited in its ability to 'headhunt'. This funding constraint clearly did not affect all departments equally since the Science professor said that he had successfully headhunted one professor and two lecturers.

Staff at both universities were also asked their expectations of the future shape of their university and whether they regarded this future as an improvement on the previous situation. At University A all of the interviewees expected the current trends affecting the shape of the university to continue in the near future. That is, the changes to administrative, teaching and research described above were perceived as being continued and reinforced in the next few years. The view shared by all was that there had been 'slack' in the system prior to the reforms and

that the changes that had taken place had reduced this 'slack'. They also all seemed to support, though not necessarily for the same reason, the greater transparency, through the RCM, of internal allocation procedures. Most saw one advantage of this new transparency as now knowing how to increase funding, either through increased teaching or increased research, or both. Another advantage, mentioned by the Humanities professors was that they now knew how biased towards the sciences the formula was and that they could now attempt to redress this bias.

However, the University A professors interviewed were by no means unanimous as to whether the continuation of current policy was going to benefit the university or not. Only one person, the professor in charge of teaching developments was convinced that the emphasis on QA would result in teaching standards rising. Although there was some recognition that there may be benefits to quality from QA, four of other professors interviewed considered that the countervailing pressures of increased student numbers, space constraints at the university, increased administration, inadequate support services and, especially in engineering and science, obsolete equipment meant that overall the quality of teaching would suffer. The recent HEFCE report quoted in *The Times* of 22nd, September 1997 draws attention to the general concern about university equipment. The point is also forcibly made in the Dearing Report. The same factors adversely affecting teaching quality, inadequate support, shortage of time, increased teaching load were also said to be adversely affecting research.

There was rather more uncertainty at University B about its future shape, because of the uncertainty about the effects of the merger with the tertiary college. All of those interviewed expressed concern about the merger making the university more like an American university, becoming more of a 'teaching factory' and less like a traditional English university with most staff actively engaged in research.

Everybody thought that such a development, although seen as necessary for the survival of the institution, was unwelcome, particularly because of its effect on research. The establishment of the research centres was, as we said above, viewed with mixed feelings because, although seen as beneficial for research, it would have the effect of downgrading departments and creating an underclass of non-research active staff. It was feared that it would be very difficult to move into the research centres so the effect on the future of academics not in the centres would be permanent.

Departmental Policy

Since much of this has been covered above this section, and the next, will be very brief.

The first question concerned the effect on departmental policy of the university internal allocation formula. As we have already said the senior staff at both of the universities saw the allocation formula as central in the determination of departmental policy towards student recruitment and staffing policy. Although, every interviewee preferred the greater transparency of the current allocation formula to that previously used, it was not without its critics. For example, the language professor pointed out that the rigidity of the model and its transparency had the effect of ‘truncating debate’ about doing things that used resources, but were not ‘rewarded’ under the RCM. (This is also the case with the funding council formula where only universities in the black are able to pursue policies that are not funded through the formula).

There was universal recognition of the basis of the internal allocation formula at both universities. As the senior Engineering professor at University B pointed out, ‘the allocation formula is meant to match the HEFCE model as closely as

possible' to 'encourage the same activities' as those rewarded under it. However, although the formula was understood this did not mean that it was accepted as the basis for departmental funding. For example, the professor of Mechanical Engineering at University B said even though the formula makes clear the options 'Since most of our money is tied up in posts and there is no money to pay for redundancy or early retirement our hands are tied'. It was also noted that if a department was over funded they had to shed staff and/or recruit students, whether or not this unbalanced the departmental portfolio.

We asked what senior staff were doing to raise their department's grade in the next RAE and it was no surprise that all staff said that this was departmental policy. At University A all interviewees claimed they were doing everything in their power to improve their grade in the next exercise. The policies pursued included all those concerned with staffing described above. In addition, every department was pursuing staff development plans to help the weaker staff in their department. Such policies included mentoring, reducing teaching load and in some cases providing sabbaticals, establishing research teams under an experienced researcher. Because Q is to be more important in the next RAE (1996) more emphasis will be given to ensuring that articles are published in the 'right' places in contrast to the most recent RAE (1992) where the policy was to get as much published as possible, even if it was not in the most prestigious journal. This point was also made in the papers discussed in chapter 4.

All staff interviewed at University B said they were attempting to get the highest grade possible. This was being achieved by putting pressure on staff to publish, headhunt and, in some cases providing staff with time off to complete pieces of research. As the Engineer pointed out 'there is no point in just getting a 2 or 3 as good staff and overseas students will only go to departments graded 4 or 5'. One professor said it was no longer the concern of departments but of the recently

formed research centres who were certainly doing everything in their power to achieve the highest grade possible. However, with this one exception, those interviewed seemed to make no distinction between policies that intended to improve departmental or research centre grades.

Two of the final questions asked concerned the validity of our research distinctions and whether our research findings from the questionnaire accorded with their own views. With respect to the first question all staff at both universities accepted their validity. In one or two cases additional comments were added. At University A, for example, the two Humanities professors both stated that although valid the distinctions were more relevant to the sciences than their subjects because most Humanities research was either basic or personal.

All interviewees were asked to comment on our findings and all thought our questionnaire results accorded with their own experience that they were largely the result of the funding council's method of funding universities. We asked finally whether interviewees would like to add any further comment. In answering this question, interviewees at both universities ranged over a number of issues, some of which were not directly related to our research question but were perceived as of concern to universities now and in the future. Most raised other issues related to changes taking place in their university. One of the engineering professors at University A suggested that the 'hit rate on research proposals is significantly lower now' and that the research councils are in danger of collapse as they become 'overwhelmed with the vetting of research proposals'. (He was heavily involved in the refereeing of proposals.).

The effect on morale and health of the pressures of academic life was commented on by three of the interviewees at University A and four of the senior staff interviewed at University B. 'At the end of term my colleagues are near an

hysterical state' the History professor at University A claimed. He also commented that 'university had become less autonomous' and, more worryingly, that 'academic purpose has been lost' as a consequence of the increased demands on staff and the new management system. Both changes were, he argued, the consequence of the needs of the RAE and the imperative of recruiting more students to stay solvent. The language professor certainly agreed with the first point 'If you want to continue as a real department you must get a high rating in research'. He also pointed out that because the RAE discounted course books the new universities would be particularly disadvantaged as this was what so many of them produced. The same point was made by the Sociologist at University B. This point was also made by Jenkins (see Chapter 4).

As we found in the questionnaire results, some of the senior staff commented on the influence of the research councils on the type of research undertaken at universities. This was commented on by all the engineers at University B. The social science professor at University A was also concerned that research panels and their members tended not to give adequate attention to novel developments, for example in the development of computer use, particularly if the innovations were cross-disciplinary. One of the science professors said that staff would become increasingly demoralised as the difficulties in getting papers published increased. He also provided an additional reason for the increased administrative load; the new UCCA form which allows students to apply to eight rather than five universities. He also warned that as quality assurance develops and everything has to be double or treble checked the burden on staff will rise. 'If ever money is tied to quality assurance the admin. work will increase to even more absurd levels'.

Similarities and Differences Between Universities

The answers to the first question, which concerned the main departmental changes experienced by senior staff since 1986, revealed considerable similarity in the views of the staff at the two universities. All commented on the increase in student numbers and the worsening of staff: student ratios, the increase in administration and the increased pressure to do research and publish. Although there were these similarities, at University A more emphasis was placed on changes to the academic staff, especially as a result of redundancy or early retirement. Presumably this difference of emphasis was because this university had been more pro-active in encouraging 'research inactive' staff to leave. At both universities all new recruitment seemed dominated by the need to get good researchers in order to improve or maintain research rating.

One important difference between the universities was in teaching: at University B the structure of teaching had been altered by the introduction of semesters and modularisation in order to attract more students. At University A no major changes in teaching were reported, presumably because the university was sufficiently prestigious to attract students without either cosmetic or substantive changes to the organisation of its teaching. It was significant that some staff at University B saw the change to teaching was having a deleterious effect on the quality of teaching.

Another difference between the universities was in the organisation of research. At University B special research centres were being established in order to improve prospects in the RAE. At University A activities to encourage staff to research and publish were taking place within the existing departmental structures. This may be another example of the way in which changes to funding are encouraging or compelling differentiation between universities.

All the senior staff interviewed gave the main reason for the changes they described as the result of funding. Some put more emphasis on the internal allocation models used at their university, others on the RAE, but all agreed that it was the way that universities were funded by the funding council that was determining university and departmental policy. At both universities the internal allocation system was based on management's understanding of funding council formula, with the internal allocation model being designed to introduce the same penalties and rewards for departments as for universities so that they would pursue policies that would maximise funding council income. To some extent this meant that the management at both universities was attempting to second guess the council and the RAE panels over such issues as whether it is better to have larger academic groupings and what the trade off was between getting a 5* with fewer staff entered and getting a 5 with more staff included in the submission. If the funding council was to alter its policies over the funding of research and teaching it may prove disastrous for those universities which have altered their infrastructure, staffing and management practices to suit an obsolete funding model. This has important implications for policy makers at institutional and funding council level. If institutional planning is to proceed in a rational and efficient way there needs to be some assurance that the 'rules' according to which resources are allocated are not going to be changed dramatically and at short notice. This is a similar point to that made by Williams when discussing the establishment of Interdisciplinary Research Centres (IRC): universities found it very frustrating and expensive to bid for IRC money when the funders were constantly 'moving the goal posts' (Williams, 1992).

When asked whether the changes described above had been for the better some staff at University A alluded to gains in teaching quality and improvements in research as better staff were recruited and less able staff left. Most thought that there had been 'slack' in the system and that had now been removed. All senior

staff were concerned that if the pressure of teaching and administration continued, or grew, it would damage both teaching and research.

At University B there was only one positive comment in response to the same question and this concerned the newly established research centres. It was felt by most senior staff that their establishment would probably strengthen research at the university. Though there was concern that this development would break the links between teaching and research and would undermine departments. Although not mentioned explicitly the increasing centralising of control that the establishment of the centres represented would also undermine the power of professors as, indeed, had the changes to internal allocation procedures described earlier. All the other changes in teaching and administrative load, teaching organisation, the separation of teaching and research were seen as damaging to research and teaching quality. Staff at University B appeared to have experienced more change than staff in University A and they perceived these changes as more damaging to the fabric of university life.

As to the effects on staffing, at both universities senior staff all believed that as a consequence of their university's policy of early retirement and more focused recruitment the quality of staff had risen. However, at University B comment was also made about the development of an underclass of teaching staff who were on part-time and temporary contracts who were generally not active in research and whose morale and commitment to the university and students may be questionable. No such concern was expressed at University A and this may be another way in which differentiation between elite and non-elite universities may be developing. There were differences in the perception of the staff of the universities with respect to the future shape of the university. At University A the pressures on the university and its staff were expected to continue and it was claimed that if they grew they would undermine teaching and research. At

University B the shape of the university was expected to change with it becoming much more like a teaching factory. This was seen as being bad for both teaching and research and for the quality of life at the university.

The staff at both universities share the view that the allocation formula was more transparent than previously and absolutely central to all departmental decisions about student recruitment and staffing policies. There is no doubt that if universities do understand the funding policy of the council they are going to force departments through their internal allocation models to pursue policies that should maximise funding council grant. To a considerable extent this policy is being pursued whether or not it is seen as 'good' for the advance of scholarship, research and teaching in the short, medium or long term. Universities appear to be confirming that 'he who pays the piper calls the tune,' irrespective of whether it is melodious or not.

With respect to staffing we have already described how policy towards staffing is determined by the internal allocation model. In both universities departments responded in much the same way because in both the internal allocation models were similar in that they mimicked the funding council model. It was no surprise to learn that all departments in University A are attempting, mainly through the staffing policies described, to improve or, if they have already the highest grade, to maintain it. At University B the establishment of research centres was intended to optimise the use of staff who were considered to have research potential or were already proven researchers. As we pointed out earlier this may be one of the more important differences between the universities resulting in University B an elite group of research active staff developing with other staff being primarily, if not solely, concerned with teaching. No such staffing distinctions seemed likely to develop in University A.

All staff interviewed said that our research definitions were valid, although some of the non-science professors said that only basic or personal research was relevant to their subject. All staff at both universities agreed that the findings from our questionnaire were generally consistent with their experience.

Concluding Comment

There appears to be considerable agreement among senior staff at both universities that funding changes have been central in bringing about the changes that have taken place at their institution. The principal changes they have in common concern changes to staffing policy, teaching load, pressure to research and publish, increased administration load, changes to internal allocation formula and, particularly at University B, the increased centralising of control. However, the interviews also revealed that within these commonly shared perceptions of changes there were important differences developing between the two universities. These differences include the separation from departments of research activity at University B, changes in the discourse and organisation of teaching, and the development of an 'underclass' of teachers, again at University B. Funding does appear to have different effects on different universities. In the longer term this differentiation may result in doubts as to whether University B may any longer be considered to be a university in the traditional sense. Perhaps the question of what a university is in the current climate and whether current funding policies are supporting this type of university needs to be addressed by the funding council and the government.

In Chapter 5 we explained why we considered it essential that we interviewed a number of senior staff at the two universities in our case study. Analysis on the interviews shows our arguments to have been justified. The interviews provided

us with a fuller and more revealing understanding of our questionnaire results than would otherwise have been possible, even with the open-ended questions. In addition, the interviews illuminated differences between disciplines and universities in their relation to the changes in funding. We were also able to discover and explore organisational differences, with respect to management, teaching and research. Finally, we obtained evidence of differences between academics and administrators in their views of the changes to funding and their effects on universities.

Footnote to Chapter 8

The problem here, as I see it, and one not apparently fully appreciated in either of the universities, is that the HEFCE has a tendency to somewhat arbitrarily **change** the rules, both for the funding of teaching and research activities. Witness the recent change to teaching and the way in which students in different subjects are now to be funded, and in research the changes to the number of publications required in each RAE and also the change in the allocation between subject **group**.

PART III: Summary Of Main Findings And Their Implications

This final part of the thesis is divided into two chapters. The first, Chapter 9, summarises and discusses our findings. In the final concluding chapter, chapter 10, we first examine the implications of these findings for 'economic' models of funding. We then consider some of the implications for policy makers, and we end by considering possible future research in this area.

Chapter 9: Discussion of Main Findings

Introduction

This chapter will present and discuss the main findings from this case study of two universities' responses to changes in the way that they are funded by the Funding Council. The chapter will be divided into three sections. In the first we will consider possible sources of bias in our results. We then examine the major findings of our research and particularly the effects on teaching and research. In the third we will consider differences that are related to gender, rank, department and year of appointment. In both of these sections our discussion will be informed by the questionnaire results and the interviews with senior staff.

Possible Sources of Bias

In the previous chapters we have presented our empirical findings. These findings were based on two sources of data: the analysis of questionnaires returned by 250 academic staff at the two universities in the study and interviews with senior academic and administrative staff at the universities. We discussed our results and qualifications to our conclusions in the relevant chapters. In this section we discuss more generally factors that might bias our results.

Funding Changes

A crucial question concerns the ascription of our findings to changes in funding method. Over the period examined, 1986 onwards, universities' behaviour may well have been affected by other influences such as the Jarratt Report (1985) (with its advocacy of management changes), the numerous new research initiatives such

as the development of Interdisciplinary Research Centres, and the recent pressure from government to force universities to expand student numbers and reduce the unit of resource. Other factors that may also have influenced university behaviour include changes to overseas student fee policy, changes in home and European Community members' fee levels, growing uncertainties about grant allocations and so on. It is impossible for our results not to be contaminated to some extent by these other factors, but to a large degree we can isolate these effects through the following: specifying a date relevant to the funding change we are examining but not to other changes affecting universities; interviewing senior staff to obtain their views of our results and of internal management changes; and by the cross-checking of institutions to see if the effects of funding changes are similar. Perhaps the most important is interviewing senior staff who have been involved in determining and implementing university policy. As the interviews reported in Chapter 9 show, all senior staff considered that the main factor affecting universities and their teaching and research has been the changes to university funding. Quotes such as 'everything is focused on March 1996' are examples of how important the RAE is seen in determining institutional policy towards staffing and organisation, including, in University B, completing restructuring the university research base by placing selected staff in newly established research centres in order to improve the university's research ratings. It should be noted that many of those interviewed were part of the universities' decision making management team and therefore knew why, as well as what, policies were introduced.

The reasons given by senior staff for the changes in the type of research undertaken and the changes to the way that it is disseminated, particularly in the Humanities, are also supported by the response to the open-ended questions; without prompting the changes are attributed to the demands of the RAE, the funding method. Further support for the importance of changed funding methods

and their influence on university behaviour is provided by Williams. Williams argues that the funding changes of 1986 pushed universities into adopting new teaching, research and management change, 'the new funding scheme gave universities an incentive to adopt some of the Jarratt Committee proposals' (Williams 1991:87). Other evidence lending support to our claim that it is the funding mechanism, and particularly the RAE that is altering the behaviour of universities is provided by Higson et. al. (1998) and McNay (1998). Higson describes the funding model developed in the University of Aston's Business School. In this model research is assessed in a way designed to mimic that of the RAE.

"The choice of units in which to measure research mirrors the priorities of the HEFCE Research Assessment Exercise. For example refereed journals and research grants are heavily weighted because these are regarded as most prestigious in the Research Assessment Exercise" (p29).

Clearly the internal funding methodology is being driven by the external model. Higson also reports how it has affected the type of output produced and how it is disseminated, essentially through journal articles - a result supported by our evidence. They also report a rather more negative effect in that staff are unwilling to engage in activities not rewarded by the model. McNay's study is much broader in scope, covering 30 institutions. He also says that the RAE plays a dominant role affecting the type of research, mode of research, quality and output of research, organisation of units and universities and internal allocation procedures. Again his findings support our own.

Some tangential support for the importance of funding method in education, though in this case it is the further education sector, is provided by Barrow (1997)

Retrospective Data

Another issue concerns the reliability of retrospective data. One of the problems associated with this type of data is that staff perceptions of change over a number of years may be clouded by their current preoccupations. This is certainly a problem that bedevils any study that examines perception of change through time. Another possibly related problem is the 'halo' effect, where respondents emphasise what they perceive as 'good', e.g. doing more teaching or doing more basic research. Three points can be made about these potential problems. First, are staff memories likely to be suspect over a period as short as seven years, the time period between the change in funding method and the collection of data in this study? Second, if there is bias is it likely to be in one direction only? If not, can we assume it will balance out? Third, the results can, to a large extent, be cross-checked by interviews with staff and examination of internal and public documents. Such data tend to corroborate the findings from the questionnaires. For example, the claim that staff are now spending more time teaching appears to be supported by the significant decline in staff: student ratio reported later.

Staff Composition - Differences Between the Universities

The staff composition of universities A and B might affect the balance of research and teaching activities in the universities, with the university with more senior staff, University A, undertaking more research and attracting more research money. The interesting fact is that there is little difference generally in the response of the universities, perhaps indicating that funding method tends to override the influence of other factors. Note too that we are not looking at absolute measures of the changes to teaching and research, but the direction of change since the new funding method was introduced.

The fact that such a large percentage of our sample had been appointed in the previous five years and that we are concerned with the effects on teachers and research resulting from funding changes begun seven years ago, may be another possible source of bias. However, this may not be so since basically the same university funding policies have been followed and reinforced since 1986. We might therefore expect similar teaching and research pressures on both new and old appointments. Pressures would increase for all appointments as internal management adjusts to the funding changes. However, although the pressures are on all staff there may be some difference between newer and older staff in their perception of the change.

To discover whether there were differences between recent and old appointments in their perceptions we divided the sample into two groups, those appointed six years or less ago and those appointed before. The results of chi-squared tests indicate no significant difference between staff in their perceptions of the direction of change in teaching and research. However, in university A there was a significant difference between older and more recent appointments in their perceptions of the time they spent on research; more older appointments considered that there had been a change in the amount of time they spent on research ($p = 0.009$). These results and other possible differences related to department, rank and gender were explored in Chapter 8 and revealed that there were remarkably few differences within these groups and between the universities.

University Type

The fact that one university is an old multi-faculty institution and the other an ex-CAT may influence our results; with the older, well-established university concentrating more on research and the ex-CAT concentrating more on teaching. However, our results show that, irrespective of the base, there is very little

difference between university staff perceptions of change. This reinforces the view that factor(s) other than university type are causing the teaching and research changes we have described. However, as the interviews with senior staff showed although the changes to teaching and research are in the same direction there may be other related changes in the universities that are different and, in part, related to their differences in background.

Type of Research

A number of questions arise from these results which indicated a decline in basic research and an increase in applied research. It may be claimed that staff are insufficiently aware of the research distinctions given in the appendix to the questionnaire and also that their research may not fit neatly into any of the categories. In fact only two in our sample of 250 stated that their research did not fall into our categories. A further possible issue of interpretation is that the results are not a consequence of changes in funding methods, but arise from the availability of funds for different types of research. It must be borne in mind that the research assessment method used by the funding council's assessment panels generally rewards cost centres (and universities) if they receive research grants and contracts, irrespective of the purpose of the research. Thus, if funds, whether from industry or research councils, are more available for applied research than other types of research, this will effect the areas that university staff will apply for if they are to ensure that their cost centres are rated highly in the research selectivity exercise and to sustain or improve their internal allocations of resources. Internal allocation of resources methods have adjusted to the changed funding methods, reinforcing the pressures to respond to funding council policy.

The above discussion indicates that our results may not be affected by the factors that we consider above. However, there may be other factors that affect the

confidence that we can have in our interpretation of the results; for example, with respect to quality changes and overall output changes in the universities. These concerns are addressed in the final section on further research.

Main Findings of Effects of Funding Change on Research and Teaching

Having argued that there are good grounds for accepting that our results are caused by the changes to the method by which universities are funded, in this section we present and discuss our main findings. As in the earlier chapters we will first discuss the effects on research and then those on teaching.

Research

Research time: The questionnaire responses suggest a clear picture in which the majority of staff in both universities are finding that the time that they spent on research had been squeezed. In University A, 61 percent of staff stated that the time they spent on research had fallen, with only 20 percent saying that they were doing more research. In University B the figures were respectively 57 and 21 percent. As our results show, the reduction in time spent on research is spread across all categories of staff. In our interviews with senior staff at University B all staff stated that the time they had to spend on research was being adversely affected by the increase in teaching and administrative load. At University A the interviewees all said that their teaching and administrative loads had risen but did not say that the time that they spend on research had declined. We have already discussed the possible reasons for this discrepancy; a discrepancy that is reinforced by the crosstab results in which 70 percent of professors perceived the time spent on research had fallen.

Apart from the reasons already suggested it may be that in the interviews we did not specifically ask whether the time spent on research had fallen but asked them to describe the major changes that had taken place to their university and the reasons for these changes. So, although they did not state that the time spent on research had fallen, for the majority it may have been implied by their comments on the enormous increase in other duties to do with administration and teaching. Support for this view is provided in the answer to our question concerning our results. All concurred with our findings that most staff in the university spent less time on research than formerly.

The open-ended questions provided reasons for these changes to time spent on research. These were essentially the same as those given above, with 76 percent of staff in University A saying that it was due to increased teaching and administration. There was a similar response in University B, though with an even higher percentage of 87 percent. It may not be immediately apparent that the increase in teaching and administration are due to funding, the central contention of this thesis. As we have said, however, the senior staff interviewed did say that the major influence on departmental and university activities was the method of funding. They also stated, and this was given more emphasis in University B, that more students had to be recruited in order to satisfy internal allocation requirements, which were themselves framed around the funding council's formula. These additional students require more teaching and increased the administrative load. The administrative load was also increased for all staff, but particularly senior staff, because of the need to put in applications for research grants, to administer research projects and to supervise and encourage colleagues in their research activities. The necessity of doing well in the RAE and ensuring as many staff as possible are 'research active,' though very important at both universities, assumed even greater importance at University A, the 'elite' university, than at University B.

One question that arises from these responses, and one that we explore later, is whether staff in responding to this question are reporting a change in their perception of time spent on research relative to other activities, such as teaching and administration, or whether they are reporting an absolute change in the time that they spend on research. When we report the change in type of research a greater percentage report an increase than a decrease in research activity. Although the base from which these changes are not asked these results may be seen as prima facie evidence of an increase in research. The only way that this result could be reconciled with the increase in teaching and administration reported earlier is that staff are spending more time on university activities than previously. This would mean that their research output could have risen at the same time as the time they spend on other activities has also risen. Concomitantly, they may also be making more effective use of their time than formerly.

Research type: The majority of staff in both universities indicated that the type of research that they undertook had not changed: 69 percent in University A and 66 percent in University B. Our questionnaire did not ask what their current research was because we were interested in changes that had resulted from the move to a different method of funding. In retrospect, it would have been of interest to know the research respondents were previously engaged in for this would have put the changes that we discovered into clearer perspective. For the majority of those for whom there had been change the shift had been from basic and personal research to applied and strategic research. The reasons given for this change, both in the questionnaires and interviews, was that money was needed for research and, subsequently, publishing, to satisfy the RAE and that more money was available for 'wealth creating' research than for other types of research. A possible further incentive to do applied research was that publishable results were more certain, and likely to be available in a shorter time and thus would fit better the

requirements of the RAE for a certain number of publications every four, or in the case of the Arts, five years.

If our results do reflect a shift in type of research then (over 30% in each university said it had changed) it is of concern for a number of reasons. Does the Government want the development of applied research at the expense of basic and personal research. Basic research, as one of the interviewees pointed out, is the foundation on which all research ultimately depends. If this foundation is systematically eroded then there may be implications in the longer term for what strategic and applied research is possible. Of course, the Government may not be too concerned if the required basic research is taking place in other countries and they are prepared to share it via papers, books, conferences and, now, the Internet. If not, then the consequences for Britain may be that we lose our position as a significant world player in basic research and that applied research may also be limited. To some extent these consequences will be reinforced by the decline in support, particularly expensive infrastructural support, for research in universities. If equipment is obsolete and inadequately maintained then British academics will be unable to carry out certain types of basic and applied research with the same adverse effects on their standing in the international scholarly community.

A further concern relates to the type of research that staff now undertake and its relation to the requirements of the RAE for 'quick' publications. This may result in papers being published that have not been as carefully prepared as formerly. In addition, a particular section of the academic community, the Humanities staff, may now be forced to engage in a different type of research than previously and to disseminate this research in a different way. This differential effect on the Humanities staff, mentioned by all the humanities staff interviewed, though not always given the same emphasis, is one of the most important results of this study and is one that policy makers may want to consider if there is to be another RAE.

It may be that it is the intention of policy to change the nature of research and scholarship in universities, but the fact that so much concern was expressed about its effect on the Humanities may indicate that further thought needs to be given to the way research in that area is assessed. This point is also related to the quality of research that we discuss in the next section.

Another result of the method of assessment is the proliferation of journals it has encouraged and the increase in the number of articles treating applied subjects. This may well have a longer term effect, for if there continues to be a growth in applied work and publications reflect this then this will inevitably feed back into teaching, reinforcing the move towards more applied work. Again, this danger may be slightly exaggerated because we do not know the extent of the absolute shift from basic to applied research. And, as we said this change may well be the intention of policy makers.

The Quality of Research

Our questionnaire results indicate that quality is perceived by most staff in both universities as having risen. Only one group, recent appointments at University B, appeared to be concerned about the quality of research falling. We provide possible reasons for their views in our discussion in Chapter -. The interviews with senior staff at the universities revealed some concern about the future quality of research, but most staff did not consider that the quality had fallen so far. The evidence from the RAEs conducted by the funding councils indicates that in both of the universities the quality of research has been rising since 1986 - the research ratings have risen in both universities. Not only has the quality of research apparently risen so too has the quantity of research, if the number of journals available and the articles published per academic is a measure of research output. It would appear that the principal university performance indicator, the RAE, has

achieved the funding council's stated objective of making universities more accountable and raising the amount and quality of research.

Although the evidence appears to point in this direction, that quality and amount of research has risen, a number of caveats need to be made. The first concerns the type of publication that is being recognised in the RAE. As our interviews with senior staff in the Humanities show it may be that more articles suitable for journal publication are being produced, but this is affecting the production of longer, perhaps more carefully explored, publications. Some of the senior staff interviewed considered that fulfilling the requirements of the RAE, and their university's internal research allocation models, was resulting in a change in the nature of research in their subjects and a diminution in its quality. Another concern that was raised concerned the ability of the 'vetting' agencies, referees for journals and research councils, to cope with the enormous increase in articles submitted for publication and submissions for research grants. There is a limited pool of referees, usually unpaid and certainly not taken into account in the RAE, that is being required to evaluate more and more submissions of articles and research applications. Although many are prepared to work long hours and weekends it seems unlikely that they can continue to provide the detailed evaluation of work submitted as formerly and at the same time continue to research and teach as effectively as previously. Our research is unable to answer the question as to what, if anything, is suffering, but the pressures on staff, particularly senior staff who are likely to be concerned with refereeing, suggests that the quality of refereeing or their other work will be adversely affected. Perhaps both will suffer.

The need of staff to publish so as to be included by their universities as 'research active' may also be affecting the quality of articles submitted to journals. There is some evidence from journal editors that many articles submitted are not of the

same quality, in terms of both content and editing, as formerly (Jenkins 1992). We have already referred above to the move towards applied research. A further long term concern stems from the increasing separation of research and teaching. This does not appear to be as important an issue in University A as in University B. In University B our evidence is that research activity is being focused on research centres and the staff based in these centres. If research and teaching are complementary products, there is a degree of jointness in supply, then the output of both will suffer if some staff are only engaged in one of them. This may become a greater problem if there is increasing division within the university system, with a few universities becoming research centred and most of the rest concentrating on teaching and doing very little research. Despite Dearing and HEFCE claims that research is not to be confined to a few elite institutions our evidence suggests that the funding method may bring this separation about. There may be a loss of efficiency if a system develops that prevents able academics from undertaking valuable research because the university employing them cannot provide the necessary infrastructure for them to do research. This is not to deny the undoubted economic reality of resources available for universities being limited and that for certain types of expensive research duplication of infrastructural support, staff and equipment, would be wasteful. However, if the policy of concentrating research continues there will almost certainly be a detrimental impact on the total research and teaching output particularly, as we state above, if research and teaching are complementary activities. This may also lead to rigidities in the academic labour market if staff become institution specific. Any developments that encourage segmentation, stratification, of the university system and its staff may be detrimental to the long-term health of the system if 'health' is in part dependent on the mobility of staff between different universities. The segmentation of the university system is discussed in chapters 2 and 8.

It may be argued that the method of funding research at universities may have additional, possibly pernicious effects on research output. Universities and their cost centres research is ranked and rewarded according to the number of staff deemed to be 'research active' and an evaluation by a research panel of the quality of their research. The emphasis is on the individual, but if it is the case that the most productive research takes place when there is a critical mass of researchers working within the same environment, though not necessarily on precisely the same subject, then this method of funding may be inimical to optimising research output. Cost centres may exclude people from the RAE because individually they feel that they will adversely affect their cost centre's ranking. Indeed, as we found in University A management deliberately encouraged staff to take redundancy or to accept a shift to an administrative post if they were deemed 'inactive' in research. If it is the case that the sum of the whole, in terms of research output, is greater than the simple aggregation of individuals output then the method of quantifying research output used in the RAE may underestimate research output as well encouraging policies that reduce total output.

Despite these caveats, which are intended to suggest a degree of caution in interpreting our findings, it does appear that staff do perceive the quality of research to have risen as a result of their increased efforts and by staffing changes, all brought about through the changes to the method of funding universities. This is all the more remarkable when one considers that at the same time staff are doing more teaching and administration. Perhaps there was some slack in the universities and this has been reduced because of funding changes. Although some of the senior staff interviewed expressed some concern about how the quality of research was being affected it should be noted that although a substantial number of respondents to our questionnaire considered quality to have risen, in both universities the majority of respondents perceived no change or some decline in quality. (See table 8).

One final point concerning quality needs to be made. We did not define the meaning of the term, assuming that respondents would use similar criteria to judge quality in their respective fields. It is, however, possible that not all respondents used the same criteria to judge quality. It may be that some were adopting similar criteria to that used in the RAE whereas others were not. Others may have adopted the criteria used by the research councils with the increased emphasis on research being 'generic' or 'wealth creating'. As we argue in Chapter 2 the performance indicators (PIs) developed for evaluating research in the RAE do not meet with universal approval in the university system. This issue of quality should have been more systematically addressed in our research.

Teaching

We will begin by briefly repeating our results concerning time spent on teaching and then discuss our results with respect to teaching quality, support services and student quality.

Teaching load/time: The general pattern of results for both universities was the same: for most staff there had been a change in the time spent on teaching and whether the question concerned tutorials, seminars or lectures the general perception of staff was that time spent had increased. This view was endorsed in our interviews with senior staff at the two universities. In fact, it is possible that there may have been some differences in what staff were referring to when they answered our questions about the increase in their teaching loads. For example, there may be differences in the typical size of lectures in separate disciplines (departments) and between the universities. One reason why such differences might arise is the differences in staff:student ratios between the two universities and within the universities differences between departments. Similar differences might arise with respect to tutorials and seminars. If these differences do exist

they may affect the method and quality of teaching. We did not investigate these issues, but will refer to them in our later discussion.

There may also have been other differences in the attribution of meaning, for example with respect to the teaching method used. Is a tutorial distinct from a seminar not only with respect to the numbers involved, but also with respect to the way that knowledge is disseminated. Are students in seminars giving papers, orally or in writing? Is this different from what takes place in tutorials? Are lectures merely large seminars or are they distinct in some other way, for example they are delivered by staff rather than by students? There are potentially an almost unlimited number of possible differences of interpretation and these differences would not have been revealed in our interviews. The senior staff may have had different perceptions themselves and we would have had no way of verifying that their perceptions accorded with those of the staff responding to our questionnaire. Perhaps we do not need to dwell on this potential source of problems because in one sense it may be irrelevant to interpreting our findings. The majority of staff in both universities see time spent on all forms of teaching as generally moving in the same direction. There would have been more reasons for concern had there been significant differences between the universities.

The quality of teaching: In both universities the pattern of responses was very similar with a relatively small percentage, 20 percent or less, perceiving quality to have fallen and nearly 50 percent perceiving quality to have risen. We have also presented the reasons why staff considered quality to have risen; these included more enthusiastic staff, greater effort/attention and the QA exercise. The interviews with senior staff at the two universities revealed a somewhat different picture from the questionnaires with only one interviewee, from University A, considering quality to have risen. Other staff from University A thought it had remained the same or fallen; all but one member of staff at University B

considered quality to have fallen. This is the one occasion where there appears to be a clear discrepancy between the results of the interviews and those from the questionnaires.

One possible reason for the difference is that different meanings were being attached to the term 'quality'. Neither in the interviews nor questionnaire did we provide a definition of 'quality'. This was for three reasons: we are not persuaded that there is a satisfactory objective definition; we thought that by providing a definition of the term we would provoke controversy and quite possibly discourage staff from responding to the questionnaire; we were interested in staff perceptions of quality, irrespective of whether they use the term in precisely the same way. The fact that staff may not use the term 'quality' in the same way means we cannot quantify the change to quality, but we are able to comment on the direction of its change. The only way that we would have been able to make a judgement about the absolute change, would be if all staff agreed on the direction of its change. If, for example all staff perceived quality to have risen we could be confident that it had in fact risen, unless staff perceptions of change are based on changing criteria.

To return to the inconsistency in our results. Our questionnaires indicate that most staff who consider quality to have changed believe it to have risen. The crosstab analysis reinforces this picture: the results indicate that there is no statistical difference between professors, (all the senior staff interviewed were professors), and other staff in the perception of change. Inspection of the statistical tables for both universities reinforces this view - indeed, of those perceiving change in quality to have occurred, proportionately more professors than other staff perceive there to have been a rise. But most of those interviewed, particularly in University B, suggest that quality, if it has changed, has fallen. These same professors also stated that they agreed with the results of our analysis of the

questionnaires; one result of which was that teaching quality was perceived by those who thought it had changed to have risen. This may indicate that in talking about quality the professors are referring to different aspects of quality at different times in the interview.

To elaborate on the above point, one way of reconciling these apparently contradictory results is to say that in the interviews senior staff were not asked directly to answer questions on quality. Issues of quality arose in response to more general questions about changes to their department and university. Thus it is possible for those interviewed to point out that support services for students have fallen, a result endorsed by the questionnaire returns; that the amount of administration and teaching load has risen so that they do not have as much time as formerly to spend with individual students; and that, *ceteris paribus*, the quality of teaching will therefore have fallen. However, because of the QA (quality assurance procedures) and other pressures on staff, including senior staff, conditions may have changed and the *ceteris paribus* assumption no longer holds and that therefore teaching quality may actually have risen. A further possible reason for the discrepancy in our results may be that the respondents to our questionnaire could have felt that because they were involved in the various quality assurance exercises and as they were spending more time than previously on teaching, its quality had risen.

The above discussion shows that our evidence does not provide absolutely clear cut evidence about the quality of teaching and the direction in which it has changed. It does appear to suggest that for the staff who perceive change to have taken place it is because staff are giving more attention and time than previously to their teaching. (Our evidence suggests that this has resulted in less time than formerly being available for research). For these staff teaching output and its quality may have risen. However, if we want to say anything about the quality of

teaching received by the average student, and this is almost certainly what the senior staff were alluding to, it could have fallen at the same time as staff were devoting more time and energy than ever in attempting to enhance teaching quality. To put it baldly: staff are now 'better' teachers, but the improvement in teaching support has been unable to keep pace with the increase in student numbers. To shed more light on students and their experiences we should also consider our results concerning support services and student quality.

With respect to support services our results from the interviews with senior staff and from the analysis of the questionnaires is unequivocal - they have declined, apart from support for information technology. This is also supported by our analysis of library spending per student and per academic. Unless there had been massive underutilisation of support services previously this means that support per student has fallen. If library support per student has fallen, *ceteris paribus*, and the quality of teaching is associated with such support, then the quality of teaching per student will have fallen. The quality of other support in the time that staff can spend per student and the availability of support services, whether it is support staff or equipment, was also stated in our interviews to have fallen. So far as support for students is concerned it does appear from our evidence to have declined. Coupled with this decline is the fact that at both universities, though for slightly different reasons (see p159), student quality is also perceived to have declined. At the same time the proportion of students passing a degree with a first or upper second class honours has risen. If the quality of students has fallen and the proportion obtaining better degrees has risen this is *prima facie* evidence that the teaching effectiveness of universities has risen. And this despite the decline in support per student and the apparent decline in academic staff time per student. If however standards have been allowed to fall this conclusion is undermined; we now need to know whether standards have fallen relative to the decline in the quality of students. If the quality of entrance qualifications, usually A levels, has

fallen then it becomes even more difficult to reach a clear conclusion about quality.

Differences Within and Between Universities

In addition to analysing the aggregated data for the universities we also tested our findings to see if there were differences within and between the universities with respect to gender, year of appointment, rank and department. As we stated earlier there were very few differences within or between the two universities which may be an indication that all groups are being forced to respond to the funding changes in similar ways: the changes in funding appear to be permeating all teaching and research activities in a fairly uniform way. However, there were some differences and we will comment on them here. We will discuss them in the following order: gender, year of appointment, rank and department.

Gender

We have already commented in Chapter 8 on the significant differences between men and women: at University B more men considered the amount of time that they spent lecturing had risen. The second difference concerned the quality of teaching: more of the female staff perceived the quality of teaching to have risen. With respect to research the only difference between the universities was that in University B there was a significant difference between men and women in their perception of the direction of change in the time spent on research.

As we noted in the chapter the sub-group gender appears to be more important in University B, the less prestigious university. However, we were unable to explain these gender differences other than by speculations about possible differences in the labour markets, both internal and external, for men and women. The

interviews with senior staff, of whom none was female, failed to shed further light on this issue.

Year of Appointment

As we reported in the earlier discussion the remarkable fact about our results is the similarities between the two universities and the fact that for the most part there was no significant differences between the more recent and older appointments in their perception of change to teaching, research, support services and the quality of students. The factors influencing university and academic staff behaviour, and we argue it is funding, appear in general not to discriminate between staff, whatever the year of appointment. As we will show later this similarity in responses is found when staff are distinguished through other means, namely rank and department.

We did discover some differences that do require comment. The first is that the differences found in University A only related to research and student quality, whereas the differences found in University B only related to teaching. One possible reason for this difference is that in University A, the 'elite' university, a great deal more research took place than in University B and that in consequence any perceived changes to research would loom larger in the perceptions of staff there than in University B. Conversely, because teaching is a relatively more important activity in University B any changes to teaching might be noticed more by University B staff than University A staff. This is not to deny that there have been major changes in both teaching and research in both universities, these are reported at length earlier, but their relative importance may have been different. This difference may have been more obvious to older appointments than to newer appointments, hence the differences found between them.

If we turn first to the differences between staff in University A they are to be found with respect to perceptions of time spent on research, type of research and to the quality of student intake.

Our general contention with respect to research and student quality, presented at length earlier in chapter 7, is that although all staff are experiencing change this will be more apparent for older appointments than for younger appointments who have been in the university a shorter time and therefore will have experienced less change in consequence. The reason for differences with respect to type of research are also presented earlier in chapter 7 and will not be explored again.

The differences in University B, where more recent appointments reported a greater increase in teaching than older appointments, are also explored earlier and will not be reiterated in detail here. The explanation would appear to be that more recent appointments are being asked to do more teaching than older appointments. It is interesting that if this is the case it does not result in there being a difference between the two groups in the *amount of time* that they spend on research. Perhaps more recent appointments now spend more time on university activities than their older colleagues. Or, it is possible that the older appointments are experiencing the same pressures on research time, but instead of spending a proportionately greater time on research they are instead spending it on administration. Certainly, our interviews with senior staff at the two universities indicated that they had all experienced a massive increase in administrative load.

One important implication of these results is that both sets of staff are finding that the time that they have available for keeping up to date with the literature, this could be termed discretionary time, is being constrained. If as a result scholarship is being undermined this may adversely affect both research and teaching since it will inevitably narrow the perspective that staff bring to their subject.

Rank

Again, we found a remarkable degree of similarity in the results within and between the universities. With respect to teaching, both the perception of change and the direction of change were the same in the two universities. It would appear that although there has been a lesser reduction in staff:student ratios in University A than University B the burden of teaching is being shared by *all* staff irrespective of rank. With respect to University B all ranks perceived similar changes to research, support services and student quality. However, in University A there were significant differences between senior and junior staff in the amount of change in time spent on research, with senior staff perceiving a greater reduction in the time that they spend on research. There were also differences with respect to perceptions of the change in type of research, senior lecturers perceived a greater move towards applied research. We explored possible reasons for these differences earlier, among them was that these are the staff who have to change the orientation of their research to obtain research grants and thereby to enhance their career prospects; the reasons were supported by the responses given in the open-ended questions and in the interviews with senior staff. One crucial implication of the results is that it appears that in the elite university, University A, the university senior staff interviewed stated that even more attention is now being paid by appointing panels to the research contribution that new staff can make, but our results suggest that the teaching load of these is increasing, giving them less time to carry out this research.

Departments

It was within this category that the greatest number of significant differences were found with respect to teaching, there was only one significant difference for research. We will consider this difference first. Within the Social Science group in University A significantly more staff than in the other departmental groups perceived research quality to have risen. This result may be explained by the fact that the biggest department within the social science group, psychology, had been more active than other departments in encouraging 'non-productive' staff to leave, supporting the remaining staff in research activities and publishing. Perhaps most importantly, because of its strong financial position, it had been able to headhunt senior staff with proven research records. The above explanation is based on our interviews with the head of the department concerned. The interviews with senior staff from other departments, though revealing them also to be pursuing policies to strengthen research, suggested that they were not pursuing them as vigorously. In addition many of these other departments were not as financially sound as the social science group and therefore were not as active in 'headhunting'.

The explanation for the departmental differences with respect to time spent on tutorials, seminars and seminars, appear to be related to the fact that certain departments have recruited more students than other departments; demand is generally more buoyant in the humanities and social sciences than in engineering and the sciences. The greater increase in student numbers in certain departments in the humanities and social sciences was confirmed in our interviews with senior staff and in the data furnished by the institutions.

If the explanations for departmental differences suggested before are correct then again we are finding that it is funding that is affecting their behaviour.

Departments have differential opportunities to recruit additional students and the finance attached to them. Despite the differences in their history, culture and research ratings again the effects appear similar for the two universities in our case study. This is not to say that they are affected to the *same degree*, but that both universities appear to be pushed in the same direction by the funding method.

Having considered the specific effects of the funding changes within the two institutions in the next chapter we will be concerned with a more general discussion of the meaning of these results for theory and for policy making.

Chapter 10: Implications of Findings

In the previous chapter we presented and discussed our main findings. In this concluding chapter we discuss their wider implications. In turn we consider the implications of the findings for the economic models described in chapter 2, their possible implications for government policy and, finally, the further research that they suggest.

Implications of our Findings for Economic Models

In Chapter 2 we critically examined four models developed by economists/social scientists to understand university behaviour: Culyer's utility maximising model, the human capital model, the 'Clark/ Williams model and the Garvin model. All the models were found to be flawed, though some more so than others. Typically, the models were flawed on grounds of internal inconsistency, ambiguity and generality and, related to this latter point, their inability to generate testable hypotheses. It is for these reasons, and the fact that some of the models did not address our research interests directly, that we were unable or unwilling to incorporate any 'tests' of these models into our research. Nevertheless, our results clearly have some implications for the models.

The most obvious point to arise from our research findings is that any model of university behaviour that ignores the method of funding institutions in its analysis will be incomplete. All the models, except that of Clark/ Williams, fail to a degree in this respect. The 'Utility maximising model,' though it may be said to include implicitly funding, as a constraint on stakeholders, is inadequate because unless the nature of the constraint, the funding method, is specified there is no way of

understanding why an existing position has been reached or predicting what future behaviour may occur. The Garvin model is flawed in much the same way as Culyer's model in that although it refers to finance and the effect that it has on university policy it ignores the effect that different methods of funding may have. It is unfortunate that in attempting to develop a purely economic model Garvin has excluded from his analysis the contribution to understanding university behaviour that is provided by the non-economic models, the collegial, bureaucratic and political models, which he dismisses by page five of his book.

A similar point could be made about the human capital model in that there is no explicit discussion of funding. However, human capital theory does appear to have some explanatory power insofar as our results show that senior management within institutions is clearly motivated by economic gain: their policies towards research, teaching, staffing, internal allocation mechanisms and organisational structure are dominated by how they will affect the institution's income. This is not a surprising result, since it confirms what most people would expect. However, it is satisfying to discover that our results are not counter-intuitive, for had that been the case it would have cast doubt on the reliability and validity of the other results of this study. It would also appear that institutions are producing more graduates and research at lower cost. If this is the case then the government has achieved one of its objectives for universities - an increase in the quantity of human capital without a commensurate increase in university costs. (This point will be explored more fully in the next section).

The only model that gives explicit attention to the method of funding is that of Clark/Williams. Our results confirm that their emphasis on the importance of funding method is justified. What our results also show, and both Clark and Williams will find it no surprise, is that the way in which universities are funded has elements of more than one model: it is a hybrid consisting of elements of both

the 'bureaucratic' and 'market' models. As we point out in the discussion of the models in Chapter 2, it is very difficult to predict the effect different models will have on university behaviour even in their pure form; and even more difficult when the model is a hybrid. Indeed, our analysis shows that even where the details of the method of funding are clear, as is the case with university funding in Britain, it is impossible to predict with any certainty what its effects may be on a given university. Our results show a degree of similarity in the pattern of behaviour in the two universities in our case study, but there are also differences in their behaviour and also differences *within* institutions themselves, for example between departments. Though these differences appear not to be as important as the similarities shared by the universities they are important and may well become more important through time. For example, the difference between the 'elite' university, with its capacity to develop its research profile through head-hunting and other staffing policies, and the 'teaching' university, relatively starved of resources and therefore forced to limit the development of its research to a restricted range of areas and to a specialist cadre of academics, may well become sharper.

Conversely, the importance of teaching and recruiting students, particularly at undergraduate level, seems certain to become even more important at University B than at University A. These differences between the institutions would appear to stem from their differences in history, culture and economic well being. Thus it would seem that although the Clark/Williams model provides some insights it has little predictive power unless the conditions of the institutions are carefully specified. This would presumably include a specification of the organisational structure and the characteristics of key personnel as these, together with the more obvious factors, such as financial viability, prestige and history affect both the type of response to funding changes and the speed with which these changes occur.

Our results shed further light on other characteristics of the models. In the Culyer and Garvin models it is assumed that the actors in the university system are utility maximisers. Garvin does not discuss possible conflicts between these actors, for example administrators and academics, and how they come to be resolved. Culyer does make some attempt to do this in his model. Our evidence indicates that a utility maximising model of any sort does not provide a very satisfactory explanation of university behaviour, at least of those in our case study. A much more appropriate model would appear to be one in which decisions about internal allocation, staffing, new programmes and so forth are made by senior management, with the minimum of consultation with other members of the university community. These decisions seem to be in accordance with how they will affect the universities costs and income, which is itself largely determined exogenously by the funding council's funding formula. It would appear then that some form of income maximising model would have more explanatory power than a utility maximising model. And such a model would need to be applied to the university overall and to its constituent parts, departments, for the same income maximising behaviour is to be observed at this level too. The driving force compelling universities to act as though they are income maximisers is the funding method.

Our results are also of interest in that they shed some light on another aspect of Garvin's model. Although in his discussion of the American university system Garvin is sometimes a little ambiguous as to whether it operates as a single market or not, he finally seems to come to the view that the system may be characterised by a number of submarkets. This view of his position is supported by statements such as (the university system of the USA is) 'segmented by geography, quality of institution, and highest degree offered'. Although it used to be said of the British university system that it was reasonably homogeneous and that students and staff could move freely between institutions offering similar products, this would appear from our evidence no longer to be true, if it ever was. Universities may be

becoming increasingly differentiated from each other with respect to what they can offer, to whom it is offered and by whom it is offered. Although we are certainly not the first to note this, our evidence lends some support to the claim that some universities appear to be increasingly becoming centres of research excellence, whereas others appear doomed to become 'teaching factories', concentrating on undergraduate work and undertaking very little research. Although it has been claimed that all universities have the opportunity to join the research elite, the Russell Group (A group of more prestigious research universities, including Oxford, Cambridge and certain London colleges that meets regularly to consider university policy), and in the recent Dearing Report on universities it was argued that all universities should be involved in both research and teaching, it seems a similar claim to that made about access to law (and justice) in this country: 'the law, like the Ritz, is open to all'.

It would appear that there are three clear conclusions from this discussion of the implications of our evidence for the 'economic' models of university behaviour. The first is that no model will be complete without incorporating consideration of the method by which the institution is funded. Second, that none of the models seems able to explain university behaviour without introducing *ad hoc* assumptions (see our earlier discussion in chapter 2) and this may be because they are based on flawed assumptions, such as utility maximising behaviour. Third, each university may be *sui generis* and therefore no simple model will ever capture the complex interactions between people and structures, internal and external, that determine behaviour. Perhaps greater insights and understanding would result from the development of models that incorporate ideas from other social sciences as well as those from economics.

Implication of Results for Policy Makers

The changes to the university funding method were introduced at the behest of the Conservative government, although the details were decided by the funding council. In this section we consider some of the intended and, perhaps, unintended consequences of the change to funding. We will consider first the effect on 'value for money' from the universities and distinguish between the short and long-term effects. We will then examine the development of segmentation within the university system, segmentation, or differentiation, of institutions and of staff. This development may also have long-term implications for 'value for money'.

The introduction of a new method of funding universities was motivated by the Government's wish to make universities more accountable for the resources that are allocated to them through the funding council(s). This policy of increasing accountability for public spending was not peculiar to higher education; other areas of education, schools and further education colleges, and other publicly supported services such as health, were also being 'required' to become more accountable for the resources that they received. Behind the move towards accountability was the idea that resources were not being used as effectively as they should: the Government was not getting 'value for money'. The introduction of markets, or quasi-markets, was one mechanism that was intended to increase competition between institutions and improve institutional performance. Evidence of the then Government's desire to 'improve' the operation of the system is suggested in a quote from the Secretary of State for Education at the time, Kenneth Baker: 'they (the state schools) don't have much competition now. Ninety- three percent of children are in the state system against seven percent in the private. I want a third type, grant maintained independent and in a system in which all three types of school compete' (The Guardian, May 29, 1987). Or, as Duffy (1990) puts it,

'LMS (local management of schools) is about putting schools into the market-place, and the hard discipline of the market place is that the weak will go to the wall'.

The extent to which the market has been introduced into British higher education is not the issue for this thesis. There must be doubts about whether or not a market has been introduced and, certainly from the perspective of neo-classical economists, whether the development of markets in higher education can result in greater efficiency. (See chapter 2 and previous section). What is of interest is whether the changes introduced by the funding councils on behalf of the Government have increased efficiency in higher education. Our results provide some tentative answers to this question; they also show how difficult it is to make a categorical judgement as to how efficiency has changed.

In Chapter 1 we discuss the concept of efficiency, distinguishing between three types: production efficiency, exchange efficiency and economic efficiency. (We gave reasons in the chapter why we reject the education production function method for measuring changes to efficiency and will not repeat them here). We will consider the implications of our results for each of these types of efficiency. Production efficiency is said to have increased when a given output or set of outputs is produced at a lower cost, that is, when the unit cost of output falls. Thus if we know how the costs has changed at our two case universities and we know how output has changed we can speculate about production efficiency changes at these universities. As with the rest of the university system the expenditure per student at the two universities fell dramatically during the period that we are investigating: by some 25 per cent at University A and by over 50 percent at University B (figures based on internal documents adjusted for inflation). The expenditure per student is a commonly used measure of the resources that are being provided at universities. Other measures, such as expenditure per member of staff, could be used, but since they all have moved in the same direction the picture of cost changes would be very

similar to that for the unit of resource so we will use that measure. We have already defined university output as consisting of teaching and of research. In doing so, we ignore the other outputs of universities. Universities are said, for example, to act as 'stores of knowledge', they also provide consultancy services, they are said to help to preserve, develop and support national cultures and democracy. If these other outputs are produced jointly with research and teaching then our results will tell us something about whether these other outputs are also being produced more efficiently. If they are not joint products then our results will only tell us something about the efficiency with which research and teaching are produced. If these other outputs have been affected by the changes to research and teaching overall university efficiency may have risen less or more, according to whether these other outputs have been negatively or positively affected. It is by no means clear that the Tory Government of 1984 had a very clear perception of what a more efficient university system would look like but that it was concerned with 'efficiency' and 'value for money' and that this was one reason for greater selectivity in research funding is made very clear in the 1985 Green Paper and the comments in the education press at the time. The Green Paper, as quoted in the THES, conceives of a situation in which there is 'loss of research funding for departments or even universities' (THES 24th May 1985 p1). The pressure from the Government on the UGC to change its method of funding universities, and particularly research, to a more selective system is recognised in a quote from Swinnerton-Dyer the UGC's Chief Executive

'The pressure (from Government) is too strong to resist, even if we wished to' (THES 14th Sept 1984). In the UGC's Advice to the Government in 1984 it formally announced its intention to introduce selectivity in research funding'.

We have already discussed the effects of the funding changes on teaching and research. With respect to teaching there seems little doubt from our evidence and publicly available data that the quantity of teaching has risen at universities, in terms

of time spent on teaching and numbers of students. We have also argued that although the quality of teaching for individual students may have fallen, the quality of teaching provided by individual teachers has risen. If this latter claim is valid then the quality of teaching per unit of teaching input has risen. Even if the quality had remained the same we can be confident that the production efficiency of teaching has risen because the same quality is being provided at lower cost. If the quality of students, another input, has also fallen, as was claimed at both universities, then this assertion of increased efficiency is strengthened if, and it is an important *if*, the quality of output has remained constant - lower quality inputs are now being used to produce the same quality product. Recent claims by staff at the Thames Valley University that it is 'dumbing down' its standards, the current HEFCE enquiry by the Quality Assurance Agency into standards at universities (see THES, 19th Sept 1997 p1) and the concerns expressed by industry about standards (see, for example, Adair Hunter of the CBI's speech to the SRHE conference, Hunter, 1997 all give cause for some doubt as to whether standards have remained constant.

Our findings with respect to research are somewhat more ambiguous. Our evidence shows that most staff are spending less time on research than formerly, but most staff consider that the quality of research has risen. Our interviews indicated that the quantity of research output had not fallen, partly because staff are working longer hours than formerly, and at weekends. In addition, at both universities the results of the RAEs indicate that the research output and its quality have risen. (The validity of these exercises has been explored earlier in chapter 3 and 4). If we use the same measure of costs, as we did for teaching we can tentatively conclude that there has been an increase in the efficiency with which the university research is produced. We should add a caveat to this conclusion. As we report earlier there has been some change in the type of research output, which means that we are not strictly speaking comparing like with like, but instead comparing the perceptions

staff had of the quantity of research and its quality, even though the actual type of research may have changed.

In reaching these conclusions about efficiency we have ignored the fact that there may have been a significant change in one of the major inputs into the production of research and teaching, namely academic staff. Our evidence has suggested that our two universities have tried to increase the quality of their staff by more careful recruitment practices, providing more in-house support and encouraging 'weaker' staff to leave. However, because our concern is with the cost at which the research and teaching outputs are produced, production efficiency, this does not present any problem for our conclusions. Indeed, it reinforces our conclusion because the result of the funding change has had the effect of making management replace inferior by superior inputs, at no extra cost. This is one possible explanation of the rise in efficiency. Another explanation might be that management has reorganised so as to make better use of its capital and labour. Perhaps the most important factor enabling efficiency to rise has been a decline in x-inefficiency in the two universities. X-efficiency is a term coined by Liebenstein in a seminal article (Liebenstein 1966) in which he asserted that incentives, motivation, and other organisational characteristics of a firm were viewed as having far greater implications for efficiency than the allocation of inputs at the margin (the usual way in which economists analysed efficiency gains). As Levin (1997) has argued with respect to schools, if educational institutions are given a clear objective function with measurable outcomes; and are provided with incentives linked to the success on the objective function; and are also given access to useful information for decision making, they are likely to become more x-efficient. The development of a new and more transparent funding method for universities may have had just this effect. When McNay (1998 p20) reports organisational changes in response to the RAE he may be referring to x-efficiency change.

Both McNay and Higson (1998) provide some support for our finding that efficiency has improved. McNay states that “over 80 percent of heads of units think quality has improved” (p20). Higson claims that “the number of journal articles has increased, as has the school’s overall research rating” (p32). Unfortunately, since neither study has effective measures of inputs, we cannot be certain that efficiency has increased with respect to the outputs that they consider.

Although we are able to say something about changes to the efficiency with which teaching and research are provided, it is very difficult to do the same for either exchange or economic efficiency without making heroic assumptions as to society’s objective function- the combination of university outputs yielding the greatest utility to society. Society is made up of different groups that almost invariably have conflicting interests. To take universities themselves, it is extremely unlikely that the stakeholders within the system - administrators, researchers, academics and students - will want the same combination of outputs as each other, and these again are unlikely to coincide with allocation of outputs desired by external interests, such as the Government, industry and the local community. What we can say is that if the funding agent, the HEFCE, reflects the views of ‘society’ then our results would indicate an increase in both exchange and economic efficiency.

Although our evidence suggests that there has been some increase in efficiency some cautionary comments should be added. The first is that our analysis is based upon cross-sectional data and examines only the short term effects on teaching and research. Some of our findings suggest that in the longer term there may be more deleterious effects of the recent funding changes that may reduce efficiency. The first of these is the changes to the nature of the research process and the manner of dissemination that we noted earlier (chapter 8): viz the demands of the RAE pushing academics into doing short-term work and into writing short pieces suitable for journal publishing. This seems particularly to have affected practice in the

Humanities. If, as we were told in our interviews, this will adversely affect research and scholarship then research output and quality will suffer and so will production (and probably economic) efficiency. Much the same point was made about the shift in the sciences towards more applied research; if all research is fundamentally dependent on basic research and this declines to the extent that it reduces the potential for applied research, then again research output will suffer and efficiency decline. And if research and teaching are complementary, or joint, products a decline in one will cause a decline in the other.

Perhaps even more important in the long-term will be the effect of the funding changes on scholarship. In both the interviews and the open-ended answers in the questionnaires respondents pointed out the increased workload and the effect this was having on their domestic life and on the reduction in time to interact with colleagues and to *think* about their teaching and particularly their research. This concern is brilliantly, and amusingly, raised in an article by Marilyn Stathern, a Cambridge University anthropologist, when discussing the ways in which universities are audited through QA and RAE exercises. Under both

‘Proof of performance and productivity requires outputs that can be measurable and thus made visible. This subverts the integral role that time with no visible output plays in both teaching and research. In teaching there must be a lapse of time - the process is one of absorption and reformulation. In research, time must be set aside for all the wasteful and dead-end activities that precede the genuine findings. Both require otherwise non-productive periods. Yet there is almost no language in the audit culture in which to talk about *productive non-productivity*’.

(Strathern, 1997 p318).

The effect, if there is one on scholarship, will take time to emerge, but when it does it will be damaging to both teaching and research.

Other effects of the funding changes are already occurring but may also be stronger in the longer term. Two of these are the stratification/segmentation of the university

system and the differentiation of staff within it. We have already commented on the differences between the elite institution, University A, and the non-elite university, University B. It is by no means a novel discovery that there is a hierarchy within the British university system, or that some universities do rather better out of research council grants than others. What is perhaps not so well understood is how the funding mechanism is bolstering and reinforcing this hierarchy. The funding mechanism, and particularly the RAE, is eroding the ability of low ranked universities to undertake research on any significant scale, because they have no funds with which to build up a research infrastructure or to attract research 'high fliers' (and they are also soon to be denied research students). This means that they have to recruit students in increasing numbers if they are to remain financially viable. This development may be deliberate policy by the funding council which is aware that the pot of research money to be shared amongst the universities is finite. However, such a policy may deny research possibilities to able staff confined to the non- research universities. It may also undermine the total research output if, as some have argued, good research does not depend on large numbers of researchers forming a 'critical mass'. And, obviously if there is a complementarity between good research and good teaching, any separation of the two undermines both.

Another development, much more noted at University B than University A, was the development of an 'underclass' of academic staff who are on temporary and part-time contracts. University B employs large numbers of these for financial, not educational, reasons: such staff cost less and in the event of financial crisis can be easily discarded. More flexibility in the academic labour market may be a good thing, but there may be a price to be paid in teaching and research as these staff may not have the same commitment to the university, to colleagues and to students. Thus what may be seen as an inequity in the academic labour market may potentially also lead to some loss of efficiency.

Future Research

Our research has made a significant contribution to an understanding of the effects of the change to university funding initiated in 1985. However, in carrying out the analysis of our data two further agendas for research emerged. The first arises from deficiencies in our research design that should be corrected in any further research on this question. The second agenda is to do with further research that could be carried out to illuminate issues and questions that emerged in the discussion of our findings.

Improvements to the Original Design

We justified the method of our research in Chapter 5, however, in our analysis it became apparent that we could in a number of cases only draw tentative conclusions from our data because certain questions were not sufficiently specific. The general problem was that we intended to investigate the direction in which universities were being pushed by the funding changes, hence we asked staff questions about whether they were doing *more* or *less* teaching and research than prior to the funding changes. However, such questions do not enable us to say anything quantifiable since we do not know either the base from which the answer is given or how *much* more or less is being done. Ignorance of quantitative evidence makes it more difficult to say anything about changes to efficiency. To add to the length of the questionnaire may have had disadvantages: non-response would almost certainly have risen and there may have been an encouragement for respondents to exaggerate or, if their memory was flawed, to give inaccurate replies. Perhaps a diary exercise would have helped, but it would have told us only what they were doing at that point in time (1993) and not, and this was the major concern, how what they were doing had changed from 1986.

Another problem that emerged concerned the meaning of 'quality' in responses. We ask respondents how the quality of research and teaching has changed in their subject area at their university. We do not have any means of checking that they had sufficient information about what colleagues were doing to answer this question, and we do not ask them to provide evidence for their response. We could have asked them about the quality of their work, to which they should know the answer, but this may again encourage exaggeration on the part of respondents. There is also the problem, alluded to above, of the effect on response rate of extending questionnaires.

Our final concern with research design concerns the interviews with senior staff. The interview schedule was designed to gain further insights into policy formation and the factors affecting policy. This provided an independent set of insights into what was influencing university and departmental behaviour. Only at the end of the interview did we ask interviewees to comment on the results of our analysis of the questionnaires. In retrospect, we should have had the interviews later when all questionnaires had been analysed, including the crosstab analysis, and we should have spent more time discussing the results and the reasons for them. This would have required much longer interviews and extending the data collection period. Unfortunately, resource constraints, particularly in the time available to the researcher and the interviewees, made this impossible.

Extension of Research

There are four main ways in which it would be useful to extend this research: increasing the number of universities in the sample, adopting a more interdisciplinary approach in data collection and analysis, revisiting the original two universities and investigating more fully the development of differentiation between and within universities. We will consider each in turn.

Our results indicate major changes are taking place in universities as a result of funding changes. An obvious, but very important issue is whether the results we obtained from our two case studies are *sue generis* or whether they reflect the changes taking place more generally in the university system (of Britain). There are at least two ways the research might be usefully extended to answer these questions. The first is by extending the number of 'old' universities. As we explain in the chapter on research design our research is limited to an 'elite' university, covering the traditional subjects, and a 'non-elite' former CAT. It would be of interest if the research was extended to cover a wider range of universities to see if they have behaved in similar ways to our two universities. Since our *central* proposition is that the method of funding is critical in determining universities' policies it would be of interest to see if the 'new' universities, which have very different histories from the 'old' universities and were, until 1992, funded under an entirely different system, have responded in a similar way as the 'old' universities. It may well be the case that the data collected in this extended research would indicate that detailed predictions of universities responses to changed funding policy will be possible only when additional factors are included in the analysis. Factors that would need incorporation into the analysis would include previous RAE ratings, financial viability, range of subjects taught, curricular arrangements, prior organisational structure and leadership styles.

It is clear from the list of factors that we consider might be included in further research that we require an interdisciplinary approach. If the interdisciplinary approach did provide fresh insights into understanding university behaviour it would have important implications for policy makers attempting to persuade universities to behave in a particular way. To take an example, if it were found that the funding method alone was the dominant influence on university behaviour then to effect the changes that policy makers wanted it would only be necessary for them to ensure that the funding method was consistent with their objectives. If, on the

other hand, it was found that universities are complex institutions whose response to a change in (funding) policy can only be predicted if details about leadership style and organisational structure are first understood then this too would considerably complicate the policy implications.

Whilst an extension of the research to other universities and the use of an interdisciplinary approach would be valuable, it would also be of interest to return to the two universities studied here to discover whether the initial findings are still supported. Most of those interviewed, for example, claimed that if the funding policy were to be continued in the same way in the near future it would have damaging effects on the quality of both research and teaching, and on the quantity of research. If this were indeed found to be the case it would mean that policy makers would need to weigh this effect against its stated policy of making the university system more 'efficient', by which the Government meant cheaper. If it was found that staff still did not think that the quality and quantity of research had fallen then it would mean that the efficiency gains suggested earlier had been maintained.

Our evidence suggests that the university system may be becoming *more* differentiated; that there is a 'market', but as Garvin claimed to be the case in the United States this market is becoming increasingly segmented. This issue of the degree of segmentation could be more directly addressed by investigating student qualifications, where and why they apply to particular institutions; by examining differences in staff characteristics, university mission statements and policy documents; through examining research profiles of the universities; and, in addition asking senior staff questions about the relative position in the market of their university and the reason for this position. Information of this sort would be of interest theoretically as education markets are not very well understood at present. It would also be of interest to policy makers, both at the institutional and national

level. Concurrent with this extension of the research there could be a further investigation of the differentiation of staff within universities; an examination of the contractual position of staff would show whether there is a developing 'underclass' of academics, and whether it is to be found in all universities. It used to be said that the contract researchers were the university 'underclass', but interestingly as their plight is being addressed (see Harris N (1997) a new 'underclass' may be appearing.

At both universities there was evidence of a 'new' culture developing, perhaps some would suggest it is a 'market' culture. This was clearly the intention of the Tory Government in its general policy towards education. (For evidence of this with respect to school policy see, for example, Whitty 1998 and Ball 1995). There was also evidence, particularly from the interviews, that staff morale seems to be adversely affected by the development of this 'new' culture and by what appears to be an ever increasing demand to do more teaching, research and administration. Both the issue of the 'new' culture and the decline of morale need a much more intensive investigation at the two universities in our study and the university system generally. Such a study would require examination of internal documents, policy statements and interviews with staff and management. Policy makers should be interested in these results.

This study has provided a unique insight into the responses of two very different universities to the new university funding method introduced in 1985. It has shown that the introduction of the RAE, the *PI par excellence* of the scheme, has dramatically affected university organisation, teaching and research. Our results show there have been both homogenising and differentiating effects. There has been a powerful homogenising influence in that internal allocation procedures, the amount of teaching undertaken by staff, the time for and type of research, and the general staffing policies have moved in the same direction in both of the very

different universities in our case study. Concomitantly, there have been important differentiating effects with the elite university, University A, not feeling the need to change its teaching methods and organisation and still able to appoint staff to do research and teach. At University B, for some staff there appeared to be an increasing separation of teaching and research with only the privileged few being provided with the support necessary to be active researchers. The research also indicated that the RAE may be affecting subjects differentially. Although the Science and Engineering staff, and, to a lesser extent, the Social Science staff, were able to pursue and disseminate research as they had formerly, this was not the case for the Humanities staff for many of them felt that the very nature of the research and dissemination process was being changed as a result of the RAE. Our evidence reinforces and extends the critique of university performance indicators discussed in chapters 3 and 4; it shows how one indicator, the RAE, can distort the 'life' of a university and, at a more general level, the shape of the university system itself. Our case study points to the importance of a broad based, inter-disciplinary and more detailed study of universities.

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Appendix 1: The Jarratt and Merrison Reports

The Jarratt Report

The Jarratt Report was published in 1985. Its title "Report of the Steering Committee on Efficiency Studies in Universities", suggests that it was concerned with efficiency in universities, but in fact it was concerned with the efficiency of management and administrative practices in universities. The Committee identified a number of "structural" weaknesses in the management of universities. These included the wide range and variety of activity undertaken; the tradition of self-government which can provide a strong unifying force within the institution; but it can also be used to delay or block difficult but necessary decisions; and professional loyalties which mean that staff often regard their status as physicists, surgeons, lawyers or technicians as being at least as important as their membership of a university. This can give rise to divided loyalties and conflicts of interest. The Report argued that this division of loyalty added to the task of uniting an institution to work to a common purpose and objectives.

The Jarratt Report went on to claim that resource allocation tended to be fragmented and unco-ordinated. It drew attention to inadequate co-ordination between the committees involved in the allocation process and the fact that 'co-ordination of resource allocation relies far too much on the Vice-Chancellor and senior administrative officers and on the informal and uncertain device of cross membership of committees'.

The Report came up with 10 constitutional recommendations for universities, and approved 9 recommendations on financial management, 13 on purchasing, and 12 on building and plant management. It recommended that within the next 12 months

every university should prepare a programme for implementing its recommendations on a basis to be agreed with the UGC, and describe how it intended to apply to its own situation the findings of the special studies commissioned by the Committee on financial management,T/304 G1G1G1

The Merrison Report

The UGC and the Advisory Board of the Research Council (ABRC) approved a working party, chaired by Sir Alec Merrison to review arrangements for supporting university research. The committee reported in April 1982. Its principal recommendations were that universities should channel proportionately more of their funds into research, concentrate research funds into selected areas, establish mechanisms for choosing research areas and ways of supporting them, take the initiative in areas where there was not a viable research base to form associations between departments in a university or between universities or other research centres, and form stronger links with industry.

The major mechanisms it proposed for effecting these recommendations was the establishment of a research committee which would judge from time to time the areas on which the university would be wise to concentrate. After a university decision on that, the Committee would ensure that in the internal allocation process these areas received adequate funds for research. It would also have at its disposal resources to provide "some modest support to bright ideas", including those "which may seem at first not only odd but positively perverse and outlandish".

Had the Merrison recommendations been followed by universities it may well have influenced research activity, and possibly teaching too. But as Williams notes the case for a Research Committee was almost immediately "weakened by the pressure exerted on the universities by the Secretary of State and the UGC to adopt the Jarratt

Committee proposals for Planning and Resources Committees to bring planning, resource allocation and accountability into one corporate process, and to delegate budgets to appropriate centres which would be held responsible for what they achieved against their budgets.

The fact that most universities do now have research committees appears again to have been a response to changes in methods of funding rather than to the Merrison Report.

Partly in response to Merrison the ABRC drew up a strategy paper "A Strategy for the Science Base". One of its main conclusions was the following:

"Accordingly, we consider that the future pattern of higher education provision appropriate to the needs of research would be for differentiation between three types of institutions:

Type R: Institutions offering undergraduate and postgraduate teaching and substantial research activity across the range of fields.

Type T: Institutions highly competent in undergraduate and MSc teaching with staff engaged in the scholarship and research necessary to support and develop that teaching, but without provision of advanced research facilities.

Type X: Institutions providing teaching across a broad range of fields and engaged in substantial world class research in particular fields where they are already pre-eminent or could achieve eminence in collaboration with other institutions.

The polytechnics and colleges were, presumably, in the Type T category. To support its case that teaching would not suffer in Type T institutions the report quoted from the Oxburgh Report.

In fact this policy was never endorsed by the Government of the time, but it may be behind present Government policy and point to the future shape of the university system.

ABRC (1983) A Strategy for the Science Base, London, HMSO.

Appendix 2: A Short History of PIs in UK Universities

“The government's interest in developing a more rigorous set of procedures for evaluating the higher education sector was first highlighted in the 1985 Green Paper on *The Development of Higher Education into the 1990s*. This pressed for fundamental improvements in the contribution of the higher education sector to national economic development. According to the Green Paper, the higher education sector's performance was below par and needed to be improved. In particular, there is continuing concern that higher education does not respond sufficiently to changing needs. This may be due in part to disincentives to change within higher education, including over-dependence on public funding, and to failures in communication between employers and institutions”.

(DES, 1986: p6.)

Moreover,

“The Government believes that it is vital for our higher education to contribute more effectively to the improvement of the performance of the economy”.

(DES, 1985: 3)

According to the government, the higher education sector could improve its efficiency and effectiveness in several ways:

1. *“Higher education should be more responsive to the needs of the economy. This will require closer links to be forged between higher education and industry. In addition, it will also be necessary to switch the subject mix away from the arts and humanities towards technical and vocational courses.*
2. *Higher education depends far too heavily on public funds and greater efforts are needed to raise private funds through applied research, consultancy and continuing education.*
3. *Greater selectivity is needed in the allocation of research funding so that more resources are concentrated in the centres of excellence.*

4. *The higher education sector needs to be more cost-conscious and should manage its resources more efficiently and more effectively. This will require the construction and regular publication of a range of performance indicators. These will be used to aid the resource allocation process both within and between institutions*".

(DES 1985) Source.

These recommendations were reiterated in the White Paper (DES 1987b) on *Higher Education: Meeting the Challenge*, which provided a clear statement (in broad terms) of the government's main policies for higher education. The government's own summary statement of these policies is given in Table 1.1. The White Paper also announced that the University Grants Committee (UGC) was to be replaced by the Universities Funding Council (UFC) and that Polytechnics and Colleges Funding Council (PCFC). These two new bodies became operational in April 1989.

The change from being a *grant* awarding body to a *funding* council (in the case of the replacement of the UGC by the UFC) is worth noting. The significance of this distinction between grants and funding was made crystal clear in a consultative document issued by the government in 1987 (DES 1987a). This document was important in so far as it gave advance warning of a change in the way the higher education sector was to be funded.

"It proposed that the method of allocating funds to universities should be changed from the block grant system to one based upon contractual agreements drawn up between each university and the UFC (and similarly for the Polytechnics' and colleges' sector)." According to this consultative document, universities would be expected to offer and deliver a clearly specified range of educational services in return for UFC funding. If implemented, this new method of funding would give the UFC and the government much greater control over the range and type of courses offered by each institution".

The control of universities is to become more centralised whilst the government continues to exhort the advantage and discipline of the market. The only way to reconcile this contradiction is if the only consumer is the government, clearly an

absurd proposition given the government's stated aim to make universities compete for students and industrial support as well as competing for government resource and research council awards.

More recently the DES has released a further consultative document (DES 1989) which proposes an amendment to the existing method of funding by suggesting that higher education institutions should obtain a greater proportion of their income from student fees and correspondingly reduced the funds allocated by the two Funding Councils. This proportion of the funding will consequently be determined by the Funding Council' views about the quality and cost of the educational services delivered by each institution. There will therefore be more control from the centre. On the other hand, the sharp increase in the proportion of funding emanating from student fees means that consumer demand will play an increasing role in determining the distribution of public funds between institutions and between courses. Consumer power will therefore become more important. The balance between these two opposing determinants of the way in which public funds are allocated between institutions (central control v consumer power) will ultimately be decided by the government in the light of experience. (Appendix A discusses these new funding arrangements in more detail.)

As suggested earlier, the government's clear unease with the effectiveness and efficiency of the university sector gave rise to the setting up of the Jarratt Committee by the CVCP. Its purpose was to inquire into the efficiency and effectiveness of universities. Among the proposals from the Committee was stated earlier:

"A range of performance indicators should be developed, covering both inputs and outputs and designed for use both within individual institutions and for making comparisons between institutions".

(Jarratt 1985 p36)

The upshot was the development of the PIs critically commented on earlier. Apart from the fairly obvious point that if a PI, such as library expenditure per FTE member of staff, is used to indicate performance is performance getting better or worse if this indicator is rising. If it is to be a useful management tool and guide to comparisons between universities questions such as these need to be addressed. However,

"the main problem is that the individual indicators do not compare like with like. For example, although it may be interesting to know that university *A* awards a higher proportion of first class degrees than university *B*, this information is of little use *per se* for evaluation purposes since we do not know whether the difference between *A* and *B* is a result of better teaching in *A* or a result of *A* attracting students with more innate ability. If indicators of output (or their quality of output) are to be used as performance measures it is essential to compare like with like. This can be done by taking differences in inputs into account before comparing outputs."

(Johnes & Taylor, 1990, p9).

Appendix 3: Questionnaire for University Staff (Academic)

General Information

Date of birth: Sex:

Current post: Cost Centre/Dept:

What subject(s) do you teach? *(Please specify below)*

.....
.....

Date of appointment to the university:

Type of contract: *(Please ring one number only)*

- | | | |
|---------------------|---|-----|
| Permanent full time | 1 | (1) |
| Permanent part time | 2 | |
| Temporary full time | 3 | |
| Temporary part time | 4 | |

Research

1. Has the amount of time you spend on research changed since 1986, or since you were appointed? *(Please ring one number only)*

- | | | |
|-----|---|-----|
| YES | 1 | (2) |
| NO | 2 | |

If 'YES':

(a) How has it changed? *(Please ring one number only)*

I now spend: **(3)**

much more time on it 1

more time 2

less time 3

much less time 4

(b) Why has the time you spend on research changed? *(Please write in the space below)*

.....
.....
.....

2. Has the type of research* you undertake changed since 1986, or since your appointment? *(Please ring one number only)*

YES 1 **(4)**

NO 2

*** See appendix for research definitions.** If the definitions do not apply to your research would you please describe the type of research you do and state whether and how the amount of time spent on it has changed and, if so, why. Please answer in b) below.)

If 'YES'

(a) In what way? *(Please ring appropriate numbers)*

I now undertake: **(5)**

- more basic research 1
- more strategic research 2
- more applied research 3
- more personal research/scholarship 4

(b) Why has the type of research you undertake changed? *(Please write in the space below)*

.....
.....
.....

3. Do you think that the quality of researching in your area in your institution has changed since 1986, or since your appointment? *(Please ring one number only)*

YES 1 **(6)**

NO 2

If 'YES'

(a) How has it changed? *(Please ring one number only)*

The quality: **(7)**

- has improved greatly 1
- has improved somewhat 2
- has declined 3
- has declined markedly 4

(b) If you think the quality of research has improved or declined, why is this? *(Please write in the space below)*

.....
.....
.....

Teaching

1. Has the amount of time you spend on tutorials, including preparation and marking, changed since 1986, or since your appointment? *(Please ring one number only)*

YES	1	(8)
NO	2	

If 'YES'

(a) How has it changed? *(Please ring one number only)*

much more time	1	(9)
more time	2	
less time	3	
much less time	4	

(b) What are the reasons for this change? *(Please write in the space below)*

.....
.....
.....

2. Has the amount of time you spend on seminars, including preparations and marking, changed since 1986, or since your appointment? (*Please ring one number only*)

YES	1	(10)
NO	2	

If 'YES'

(a) How has it changed? (*Please ring one number only*)

much more time	1	(11)
more time	2	
less time	3	
much less time	4	

(b) What are the reasons for this change? (*Please write in the space below*)

.....
.....
.....

3. Has the amount of time you spend on lectures, including preparations and marking, changed in the last six years, or since your appointment? (*Please ring one number only*)

YES	1	(12)
NO	2	

If 'YES'

(a) How has it changed? *(Please ring one number only)*

- | | | |
|----------------|---|-------------|
| much more time | 1 | (13) |
| more time | 2 | |
| less time | 3 | |
| much less time | 4 | |

(b) What are the reasons for this change? *(Please write in the space below)*

.....

.....

.....

4. Would you indicate whether there has been an increase, decrease or no change, since 1986, in the following categories of work. *(Please ring the appropriate numbers)*

	U/grad	PGCE	Diploma	MA	M.Phil/ Ph.D	
Same	1	1	1	1	1	(14)
Increase	2	2	2	2	2	
Decrease	3	3	3	3	3	

5. Do you consider that the quality of teaching in your field/discipline at your institution has changed since 1986, or since your appointment? *(Please ring one number only)*

- | | | |
|-----|---|-------------|
| YES | 1 | (15) |
| NO | 2 | |

If 'YES'

(a) How the quality changed? (*Please ring one number only*)

- | | | |
|-------------|---|-------------|
| much higher | 1 | (16) |
| higher | 2 | |
| lower | 3 | |
| much lower | 4 | |

(b) Why do you think this change has occurred? (*Please write in the space below*)

.....
.....
.....

6. Do you consider that the support service for students (eg library facilities, pastoral care) has changed since 1986, or since your appointment? (*Please ring one number only*)

- | | | |
|-----|---|-------------|
| YES | 1 | (17) |
| NO | 2 | |

If 'YES'

(a) What has changed? (*Please write in the space below*)

.....
.....
.....

7. Has the type of student recruited to your field/discipline changed since 1986 or since your appointment? *(Please ring one number only)*

- | | | |
|-----|---|-------------|
| YES | 1 | (18) |
| NO | 2 | |

If 'YES'

(a) How has it changed? *(Please ring one number only)*

- | | | |
|----------------|---|-------------|
| much more able | 1 | (19) |
| more able | 2 | |
| less able | 3 | |
| much less able | 4 | |

(b) Why do you think this change has occurred? *(Please write in the space below)*

.....

.....

.....

Appendix

• **Research Definitions**

* **Basic Research**

Experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts.

* **Strategic Research**

Applied research which is in an area which has not yet advanced to the stage where eventual applications can be clearly specified.

* **Applied Research**

Research directed primarily towards practical aims or objectives.

• **Personal Research**

Research undertaken to further one's own understanding of **Scholarship** developments in one's field or discipline.

* The first **three** research definitions are those used in the Frascati Manual and Cabinet Office Annual Review of the Government Funded Research and Development

Appendix 4: Interview Schedule for Senior Management

General Questions

1. What have been the major changes your Department has been faced with since 1986?
2. What has brought about these changes?
3. On the whole for your department would you say the change is for the better? And if so, what has improved? What has been more adversely affected? What about other departments?
4. What have been the specific consequences for teaching, including teaching method, research and administration? (Any objective data on these? And quality?)
5. Have the changes affected the type of staff you recruit and retain and, if so, in what way? (Egs. of targeting for recruitment, redeployment or early retirement).
6. How do you see the general shape of your university changing over the next five years? Do you think this is good or bad?

Departmental Policy

7. How important is the internal allocation formula in determining departmental policy. Are there other ways in which funding changes affect Salford and the department?
8. What have been the staff changes in your departments, particularly of administration, contract researchers, (are these the people doing the research?) academic staff and why? Any examples of headhunting in your departments, or of targeting staff for redeployment or early retirement and grounds for doing so.
9. Are you going to try to improve research grade in next research exercise? If so, how? What, if anything, will be the effect of moving to Q in the next research exercise.

Research Design and Findings

10. Are our research distinctions valid?
11. Anything that you can add to help explain our findings? (Preceded by brief description of findings).

Appendix 5: Actual and Sample Distribution of Staff in the Institutions (percentages)

	Professors	Readers	Senior Lecturers	Lecturers
University A				
Actual (n = 819)	23	12	21	44
Sample (n = 145)	28	14	24	33
University B				
Actual (n = 363)	13.5	4	25.6	56.8
Sample (n = 106)	17	8	26	48

Comment: It appears that at both universities the more senior staff are slightly over represented and the lecturer staff under-represented, particularly in University A. One possible reason is that junior staff are too busy to fill in our questionnaire. Our results certainly indicate that they have experienced a substantial increase in their teaching responsibilities. However, our returns also indicated that senior staff had greatly increased teaching and administrative loads. Whatever the reason the differences in the percentage were not statistically significant and therefore unlikely to bias our results. Indeed, had the differences been significant, the fact that there was so little differences in the responses to our questions indicates that there would have been no bias in our findings even if there was in the sample of staff. (See Chapters 6-8).

Appendix 6: Significant Tables for Chapter 7.

Only the ns and significant levels are given.

Teaching

University A

Table 1 Tutorial Times by Department

	H	PS	SS	AS
1	15	5	6	1
2	19	7	5	17
3	2	2	3	5
4	1	-	2	5

Pearson = 0.001

University A

Table 2 Change in Lecturing Time by Department

	H	PS	SS	AS
1	5	8	-	6
2	12	8	12	18
3	7	-	1	5
4	1	-	-	1

Pearson = 0.0002

Where:

H = Humanities

PS = Pure Science

SS = Social Science

AS = Applied Science

1 = Much more

2 = More

3 = Less

4 = Much less

University A

Table 3 Change in Teaching Quality by Department

	H	PS	SS	AS
1	3	1	-	1
2	17	12	5	15
3	11	1	7	7
4	-	-	1	1

Pearson = 0.002

University B

Table 4 Change in Times on Tutorials by Year of Appointment

	Yes	No
Newer	30	4
Older	38	17

Pearson = 0.039

University B

Table 5 Time on Seminars by Year of Appointment

	Yes	No
Newer	15	12
Older	12	38

Pearson = 0.006

University B

Table 6 Change in Time on Lectures by Gender

	Male	Female
Much More	15	-
More	31	38
Less	4	4
Much Less	5	1

Pearson = 0.024

University B

Table 7 Change in MPhil/PhD Work by Year of Appointment

	Yes	No
Newer	2	10
Older	12	8

Pearson = 0.027

University B

Table 8 Change in Teaching Quality by Sex

	Male	Female
Yes	48	12
No	30	1

Pearson = 0.03

Research

University A

Table 9 Change in Research by Rank

	Professors	SL	L	Researchers
Much More	5	2	-	3
More	5	6	6	1
Less	11	9	23	9
Much Less	16	10	7	2

Pearson = 0.038

University A

Table 10 Change in Research Type by Current Post

	Professors	SL	L	Researchers
Yes	11	17	11	5
No	28	16	34	15

Pearson = 0.047

University A

Table 11 Quality Change by Department

	H	PS	SS	AS
Much Higher	2	2	1	5
Higher	12	3	8	7
Lower	9	2	1	6
Much Lower	1	2	-	2

Pearson = 0.006

University A

Table 12 Time Spent on Research by Department

Department	Yes	No
1	25	20
2	5	17
3	4	1
4	14	26

Pearson = 0.05

University A

Table 13 Time Spent on Research by Year of Appointment

	Yes	No
7 Years or Less	32	14
More than 7 Years	63	8

Pearson = 0.009

University A

Table 14 Research Type by Year of Appointment

	Yes	No
7 Years or Less	8	36
More than 7 Years	30	41

Pearson = 0.03

University B

Table 15 Change in Research Time by Sex

	Male	Female
Much Higher	6	2
Higher	7	6
Lower	29	2
Much Lower	23	1

Pearson = 0.002

