THE INTERACTIONS BETWEEN RESEARCH AND TEACHING

ANNEX C

Indirect relationships: shared facilities and cross-subsidy

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ANNEX C INDIRECT RELATIONSHIPS: SHARED FACILITIES AND CROSS-SUBSIDY

Contents

1 Objectives

1.1 Our aim in this Annex is to provide information on:

- the pattern of resource use by teaching and research
- whether there is a subsidy from research (R) to other activities, or vice versa
- the potential extent of this – throughout different parts of the sector, and in different subject areas
- the significance and implications of these findings.

1.2 There is currently little hard information available in the sector on the costs of institutional activities. To identify subsidy it is necessary to have both the costs and income of each main type of activity – teaching (T), research (R), other activities (O) – (or information on the deliberate reallocation of resources). Costing systems designed for the Transparency Review of Research[1] are currently being implemented, and these will provide this level of cost information, but the data from these will only be available in summer 2001 (and fully robust data from 2003-04).

1.3 However, it is possible at this stage to do three things:

- to ensure that the different concepts of cross-subsidy are understood and to consider when these might be appropriate
- to obtain a fairly clear picture, based on evidence that already exists in the sector, as to whether there is any cross-subsidy, where this is happening, what is causing it, and the likely extent of it
- to look in some detail at the three most important areas where facilities are shared between T and R.

1.4 To do this, we:

- worked with a small number of institutions who had early Transparency information, to develop and analyse their early figures. These institutions included low-R and high-R institutions[2]

[1] Transparency Review of Research: Report to the Science and Engineering Base Co-ordinating Committee. J M Consulting Ltd, June 1999

[2] High-R institutions are here broadly defined as institutions with more than 25% of their activity as R; low-R have less than 25% of their activity as R

- considered the results of consultancy studies undertaken by the HEFCE and CVCP to identify the funding gap for research[1], including the SQW report referred to in Dearing[2]

- interviewed senior managers, including finance/resource managers, at 13 institutions and discussed cross-subsidy and shared facilities

- discussed these with a significant number of staff in other institutions with whom we were dealing on Transparency Review issues

- discussed the funding and use of resources with bodies such as UCISA and SCONUL

- drew upon a wide range of information that we already had on resource allocation models and research policies.

1.5 We first provide a summary of our findings and conclusions, then in Part I discuss practice and issues surrounding cross-subsidy. In Part II we expand particularly on the use of shared facilities and the way this may benefit both T & R.

2 Summary of findings and conclusions

2.1 Subsidy occurs when an activity or service is not required to cover its full costs, e.g. because the institution accepts a lower price or income than the full cost of the activity or service.

2.2 Cross-subsidy is commonly defined in terms of cost – where the funds provided for an activity are used to cover part of the costs of another. The normal way of identifying cross-subsidy would be to compare income and costs for each activity. However, neither income nor cost are simple concepts.

2.3 Cost levels may be lower than the resources which are being (or should be) expended – typically, they do not reflect the long hours worked by some staff; they generally do not include adequate spend on infrastructure.

2.4 Although most costing models (including Transparency) operate on a full cost basis (all activities bearing their full share of overheads) this does not recognise the 'cost-free' feature of the additional time being provided from the long hours worked by some academic staff. Research (and administration) are generally the activities undertaken in this time. Therefore, while research (in particular) is being allocated a full share of costs for reporting, it is often being undertaken at a nil or low real marginal cost to the institution. This then means that teaching is receiving a proportionately lower cost allocation than it would if there was no 'additional time'.

[1] Review of Dual Support: The Research Funding Gap. Report of a study by Segal Quince Wicksteed Ltd for CVCP and HEFCE May 1997; Indirect Costs of Research Council Projects and Programmes. Report by Coopers and Lybrand for CVCP, HEFCE and OST, March 1998

[2] The National Committee of Inquiry into Higher Education (The Dearing Inquiry) July 1997

2.5 Costs of both R and T are also lower than their full economic level, as infrastructure spend in the sector is acknowledged to be lower than that required to maintain estates in a fully 'fit for purpose' condition.[1] Under Transparency early evidence is showing that full spend on infrastructure could add between 1% and 9% to institutional costs.

2.6 The allocation of costs between activities is not simple. Considerable judgement is required when establishing the cost levels of one activity compared to another. There is a significant amount of sharing of staff and physical resources (staff time, equipment, space, learning resources). This is an important feature of HE provision (of both teaching and research), and any subsidy conclusions need to recognise this.

2.7 Although figures for the costs of each activity in institutions are not yet available, a broad-brush analysis at this stage indicates that income and costs in teaching are not at the same level, and they are not at the same level in research. In fact it would be strange if they were, given the different methods of pricing and funding used for different types of activities in institutions (in which cost plays only one part). The size of the difference between income and costs will be different between a high-R and a low-R institution, and will be different for each department.

2.8 Five main conclusions can be drawn from the analysis we have made:

i **It is likely that non-publicly funded (NPF) income in O, R and T is subsidising publicly funded (PF) income in R and T[2].** Early Transparency figures are showing this. The main reason for this is that NPF income generally better than covers costs, and much of the PF income does not.

ii **Costs should not be seen as 'ring-fenced' to one of T or R. Many costs are shared.** From a high-level analysis of the sector, it can be seen that:

- R income covers its own costs, and contributes some funds to the generic or core facilities that it shares with T
- T income covers its own costs, and contributes significant funds to the generic or core facilities that it shares with R
- Other activities are considered to more than cover their costs (any use of core facilities should be recharged at full cost) and to contribute to the generic or core facilities shared with R & T, often significantly.

One of the characteristic features of HE is the economies and benefits from the use of shared facilities. Libraries, IS/IT spend and equipment are significant cost areas. These are, to varying extents, shared by both research and teaching. Some academic time is shared (e.g. when undergraduates are working in

[1] This is being quantified under Transparency through an infrastructure adjustment that is being included in the costs being reported. However, in this Annex (unless stated) the costs discussed are those in the published accounts, i.e. not including this adjustment.

[2] Non-publicly funded income is defined under Transparency as including income from sources other than the UK government, including charities and industry. Publicly funded income is from the institution's own sources (e.g. reserves), funding council and Research Council grants, and funding from UK government and the EC.

research groups). Much of the general infrastructure (central services, etc) provides a common pool of support for both T & R. These facilities benefit both T & R. The extent to which they are shared differs.

These 'shared costs' are significant. Broad estimates we made have put these at possibly one-third of institutions' costs.

iii. **There is no evidence that the use of shared facilities is detrimental to teaching.** The indications from available information are that:

- efficiency gains, the increased pressures for accountability, and increased administrative demands, as much as any increased R, have contributed to the increased SSRs and pressure on academics' time
- the 'drive for research' has not evidenced itself in lowering performance indicators in T (although there are so many other factors that affect this, it could only ever be a crude measure)
- there is anecdotal evidence, which Transparency is starting to confirm, that some academics are working long hours, which has enabled them to satisfy both their teaching (and research) workloads
- spare capacity in physical facilities (equipment, space, etc) can sometimes be used.

iv. **There is a fairly widespread view that pressures on staff time, while not directly affecting teaching, are having an impact on innovation and development in teaching and learning and on support to students outside of direct teaching activity.** It would need further work to quantify the extent and significance of this effect. There is no evidence that the UK is less innovative than other countries

v. **We found strong evidence that sharing facilities with research benefited teaching.** This occurred with additional facilities being available for T (increased library spend, equipment, research staff, etc); the often indirectly associated increase in non-publicly funded students and O income; and an increased scope to manage workloads (with lower SSRs) to the benefit of T.

We discuss elsewhere in this report the wider benefits to T. As one institution commented: 'One person's cross-subsidy between teaching and research is another's cross-fertilisation.'

2.9 Overall, we found that there was a subsidy to R from non-publicly funded T and O. Low-R institutions without high R ratings, and NPF students or O income are, however, likely to show a subsidy from PF T to PF R.

2.10 We found significant areas of shared facilities, cross-benefits between T & R, and no evidence of any detrimental impact on T. Much of R is carried out at little additional cost to the institution. There is evidence that sharing facilities benefits both T and R.

2.11 However, notwithstanding this, there is no reason why a core activity such as research should be priced on a marginal or less than full-cost basis. External sponsors should be funding their proportionate share of facilities used. If this happens, then monies from T and O could properly be used to fund improved quality, innovation, and more efficient or effective practices.

PART I. CROSS-SUBSIDY

3 Introduction

3.1 In this part we:

- define the activities that we are looking at in terms of cross-subsidy
- consider how cost levels for each activity can be established
- discuss how funding methods makes it actually unlikely for income and costs in any activity to be equal
- discuss whether cross-subsidy is in fact something to be avoided
- identify that cross-subsidy and the sharing of facilities are taking place
- discuss the extent and magnitude of this, and its significance.

3.2 We firstly define cross-subsidy. Cross-subsidy is referred to here as the funding of the costs of one activity by income being provided to other activities. Obvious examples of this are:

- teaching funds subsidising research activities
- research funds subsidising teaching activities
- funds from 'other activities' subsidising teaching, research, or both.

4 Defining the activities

4.1 Research can be defined in a number of ways. We are continuing to take the broad definition of research (i.e. including applied) that we gave in the main sections of this report and for the purpose of this Annex, we are defining it as a separate activity from scholarship (as Transparency does).

4.2 Use of any definition immediately raises some interesting costing issues. In respect to the definitions used here the following deserve careful note:

- The time (and costs) of scholarship are considered a support cost for teaching, research and other activities, and are generally attributed to those three areas. However, there is often no specific ‘scholarship’ activity undertaken under that name in high-R institutions, or high-R departments. We discussed earlier in this

report how research can also be scholarship – but no matter what form the scholarship takes, it still needs to feed into teaching.

Yet the costs of research (even when they are a form of scholarship) are considered to be research (and attributed only to R under Transparency). As a result teaching costs have little scholarship element, and in a high-R institution the same level of T activity will be costed at a lower level than in a low-R institution.

- The first year of PGR students training is deemed in the HEFCE funding model to be teaching, yet it is often considered as a research activity (including in Transparency).

- There is blurring in some activities as to whether they should be classified as R or O.

4.3 There are similar definitional issues in teaching:

- There is considerable belief that Other includes teaching (CPD etc). However such outreach teaching/CPD activity can be defined as non-publicly funded T (and is so defined under Transparency).

- The full costs of residences and catering (or the deficit on them) could be deemed a cost of teaching – a marketing/student support cost. Alternatively, residences and catering could be regarded as O (income-generating, full-cost) activities (and are so defined under Transparency).

4.4 This means that any costing of 'teaching' could vary, probably by 20% or more in many institutions, depending on the precise definition used. It is not always easy to ensure that similar definitions are used for both income and costs, nor that those referring to these figures know precisely the scope of the activity they are considering.

5 How to establish cost levels

Shared costs

5.1 Costing is an art, not a science. There are many complex points of judgement in costing that mean that no given figure can represent precisely the costs of any one activity. This has been formally recognised under Transparency where reported costs are required to be a 'fair and reasonable' representation of the costs of an activity, and subject to materiality (defined as plus or minus 10%).

5.2 Transparency has had to require institutions to assign costs into one of three (four) activities – research, teaching, other activities (and support). However, it is of great concern to the academic community that activities are ring-fenced in this manner. This, they argue, and with point, is bad academically (the activities should show synergy, there are indivisible links between scholarship and research and teaching, etc); and it is not possible practically. As one institution said to us: 'While it is possible to separate these activities [T & R], both for management and accounting

purposes, we believe that much of such separateness is necessarily artificial and does not reflect the continuous synergy between the two'.

5.3 The issues derive from the concept of the 'indivisibility of T and R' – a well-used phrase that concerns issues around T and R being carried out together – Y3/Y4 students working with researchers, thinking that is informing R as well as T, and so on. Some of the academic (and technicians') time spent on teaching in these areas could be attributed to research; some of the researchers' time could equally be attributed to teaching.

5.4 The support time of academics – management, administration, scholarship – can be attributed to T, R and O in several ways. These would each lead to different reported levels of costs in each activity (yet all might be equally valid). As we commented previously, scholarship does not generally exist separately from research in high-R institutions or departments – should some of the R costs therefore be attributed to T (to avoid under-stating T)?

5.5 There is a second, equally valid, point that relates to the common core of services in an institution. There are central (or departmental) resources that provide the operational infrastructure – some may be required purely for one activity (such as the research contract administration unit), but many are shared by all activities.

5.6 Some, such as estates, can be linked to measures of usage (e.g. occupation). However, for other areas, the methods for attributing their costs usually require proxies such as staff numbers or student numbers. This is an approximation. There is no better cost driver that can give precise usage for these resources by any one activity.

5.7 There is little good information on the relative usage of IS/IT, equipment and library/learning resources by T, R and O. We discuss this further in Part II of this Annex. Again, different levels of costs could be attributed on usage, but acceptable measures and assumptions are not easily identifiable in most cases. Similarly central overhead costs (finance, secretariat, personnel department, etc) can be attributed in various ways.

5.8 The main problem is how to allocate these shared costs without having good measures for use. These costs are substantial:

- Central services such as finance, secretariat, personnel, senior management functions, are all support facilities that are required for both T and R. There is a minimum level of these services that are required irrespective of the type of activity (or indeed volume of activity) – and much of the costs in these areas could not be attributed on any measured basis to T or R.

- Departmental infrastructure such as the dean/head of school or department, much of the secretarial and clerical support, which similarly supports both T and R.

- Libraries, which are almost wholly a shared cost benefiting both T and R.

- IS/IT, which is partly a shared cost and partly allocable to either T or R.

5.9 As one head of planning (in a high-R institution) put it: 'I don't believe it makes any sense for a university such as [ours] to make separate allocations to support services for their support for teaching and research. The service they provide is a holistic/integrated service and there would be very few support activities which could be unambiguously seen as teaching-only or research-only. For example, research monographs and journals are used by honours and masters students for their dissertations.'

5.10 A more thorough discussion of the shared nature of these facilities – in the areas of libraries, IS/IT, and equipment and space – is provided in Part II of this Annex.

5.11 In considering subsidy, therefore, it is particularly important to recognise this shared use of many facilities, and the fact that any allocation of their use between T and R is often arbitrary and difficult. The basic infrastructure of a library would be required for T even if there was no R; in high-R institutions, a significantly similar level would probably be required for R even if there was no T.

5.12 While it would generally be inappropriate (in an institution with significant amounts of both R and T) for all of these to be funded solely by one activity, there is no *prima facie* reason why the funding of these shared facilities could not be weighted to one activity or the other at least to some extent. This reinforces the perception held by most institutions with significant R of the mutual benefit and synergy between T and R. The sharing of facilities demonstrates beneficial synergy between activities. It reduces costs and improves the resources available to each. This further complicates 'cross-subsidy' investigation.

5.13 The discussion above centred on facilities that are shared with both T and R contributing to their cost (albeit not in proportion to their use). More subtly, the concept of shared facilities can be extended beyond this. T can use facilities whose costs are generally specifically allocated to R:

- research equipment is often used by students, particularly in Y3/Y4 and PGT
- research equipment originally purchased and used for R, is often made available for general department use at the end of the research contract (and therefore used by T – although at no cost to either T or R)
- research consumables can contribute to the departmental pool of consumables
- similarly with secretarial staff funded through research budgets
- Y3 students work with research groups for part of their time. We were assured by several heads of department that Y3/Y4 students do 'real' research, and a not-insignificant 'some' of it results in published work. Some of this would be done in research laboratories and as part of research programmes. Sometimes this is formalised (one institution we visited allocates some R funding to T in recognition of this)
- more broadly, the input of R (as scholarship) into T.

5.14 These examples of beneficial synergy are less prevalent in low-R institutions. As one institution commented: 'the inter-relationship [extended in the context of this section to include the use of R facilities by T] can prove problematical especially…where traditionally there has tended to be a separation of T and R funding streams e.g. R funding routed through separate research centres'.

5.15 There are examples of this beneficial synergy and sharing of facilities that cross boundaries outside the HE sector. Knock-for-knock between HE and the health sector is perhaps the most significant example of this. It is very difficult to separate the costs of providing clinical services to patients (where students are present) from the costs of T. Similar issues can also apply to medical R.

5.16 Within HE overall, the existence of shared facilities means that a simplistic notion of a calculated cross-subsidy is not appropriate. The costs of T and R cannot be ring-fenced so specifically when considering subsidies. The allocation of shared costs is judgmental. Even when allocated, these costs then represent only part of the true cost of the facilities being used by each activity. It follows that when funds from an activity cover more than 'its allocated share' of costs, this does not necessarily mean it is providing some sort of subsidy to another activity that is sharing these resources.

Not all activities incur full costs

5.17 Most comprehensive costing models (including Transparency) require all activities to bear their 'full costs', i.e. including a share of all costs either directly allocated or attributed using a cost driver. These drivers include academic staff time (for staff costs); space used (for estates costs) and so on. This assumes that there is a relationship between these drivers and costs. However, this is not always the case, particularly with staff time.

5.18 A significant amount of research is carried out in 'own time'. A study for the Dearing Review[1] found that 88% of staff carry out research, or both teaching and research. With the median amount of time spent on R of 20%, most (56%) 'almost always' did R in their own time, 34% did R 'sometimes' in their own time. The figure for staff from low-R institutions was higher for the former (at 63%).

5.19 This extensive use of 'own time' has been borne out by our discussions with institutions, and is starting to be corroborated from early Transparency findings (although very few findings on hours are as yet available).

5.20 This 'own time' does not, broadly, incur any additional cost to the institution (save perhaps indirectly in health and safety, early retirements or staff turnover).

5.21 Staff, particularly in low-R institutions, carry out a considerable amount of research that does not bring in income, but is undertaken for other reasons, such as staff development, scholarship, personal satisfaction, personal interest, and so on (as shown in the same survey).

[1] Higher Education in the Learning Society – Report 3. Academic staff in higher education: their experiences and expectations. Bernard Casey, Policy Studies Institute 1997. Survey of 809 academics.

5.22 In low-R institutions, an individual might carry a full teaching load inside 'normal' working hours, perhaps taking up all of the time then available. If no research was carried out (outside of this time) then T would bear the full costs of that person. If research is being carried out (outside of this time) then R would be allocated some of the individual's costs, with T then bearing less than the full costs of that person.

5.23 For low-R institutions, in particular, any comparison of teaching costs with teaching income needs to acknowledge this 'free' time.

5.24 This is relevant to other areas. Sometimes facilities are used by projects that are not recognised in the institution's costing systems. For example, in areas of professional practice such as art and design, 'almost all of the research outputs rely on direct partnership with galleries, theatre and performance venues which make direct contributions to the costs of art production and research, though [it] is not quantified.'[1]

5.25 Conversely, activities such as T and R can be charged the full cost of a facility (such as space), yet they collectively might use only part of its capacity. There may be spare capacity, which means that more activity (either T or R) might not lead to increased costs. With higher levels of activity, T and R might be reported with lower cost levels (proportionate to income) than for the lower levels of activity. (This can be seen in departments as well as at the whole institution level, and is often described in terms of utilisation, or economies of scale.)

6 Income and costs are unlikely to be equal

6.1 There are several reasons why there are likely to be differing levels of income and costs for activities. These derive from sponsors' policies on funding, institutions' resource allocation policies, and departments' policies on work prioritisation (and how this is reported).

Funding is not closely based on costs

~~1.2~~6.2 Institutional funding is only loosely based on costs:

a. HEFCE provides a block grant for teaching and research. This grant is built up of two main streams – funds allocated through the teaching model, and funds allocated through the research model. The two models operate very differently – the first (broadly) funds similar provision at similar levels (and all provision in each subject area is deemed to be similar, irrespective of type of institution and quality); the second is a model that (broadly) funds volume (income, staff and postgraduate student numbers) weighted by their quality rating (determined through the RAE).

   Both take account of sector costs in terms of the different subject/discipline weightings which were originally informed by sector returns (HESA). But these data were for one period in time; they were not very robust (i.e. not based on consistent costing models); and there was no differentiation between R and

[1] Submission to project team from specialist art school.

T costs in each department. The two totals now allocated through the funding streams of R and T were derived through historical and policy reasons – not from information on costs of R, or of T, (which was not available).

b. R funding is based on retrospective performance. The current year's allocation is not based on current year's activity (unless the institution has 'forced' the two to agree).

6.3 At an activity level (department or institution) income and full costs on funding council-sponsored T and R are rarely compared for reporting (except in some low-R institutions). Transparency is likely to change this.

6.4 Income from other sponsors is also rarely equal to cost:

a. Institutions can set their own levels of prices for certain fees (part-time, overseas) and for many research contracts and commercial activity. These should be informed by full-costs, but high quality cost information has rarely been available in the sector. As important as costs are a wide range of other factors – competition, intellectual property, benefits to the institution, etc – all of which will lead to prices (and therefore funding levels) being higher or lower than cost.

b. Even if prices are set at cost, they may not be recoverable. EU, UK Government and other sponsors of research contracts provide many examples of this. We undertook a short survey of eight institutions and found, in general, government departments fund at lower than full cost. The studies by Coopers and Lybrand (1997) and Segal Quince Wickstead (1997) found that Research Council funding plus the HEFCE R grant ('dual support') did not cover full costs of the research being done.

6.5 Therefore, it is *prima facie* unlikely that costs will equal funding levels in any one activity in an institution. Of course, overall, institutions need to balance the two (or make a surplus) over the medium/long-term. In the short-term, diversification and investment are two strategies which assist in doing this, but these themselves incur costs usually without a corresponding source of funding.

Lower-level costs are not closely based on income

6.6 Although overall costs and income need to be closely balanced at an institutional level, in any one activity or department within the institution there may be an imbalance. Institutions often use HEFCE funding models as a basis for their own income allocation to departments, but they may not require costs to match this income. The resulting departmental surpluses or deficits may not then be specifically addressed by an increase or reduction in that department's spend. Other institutions do use the HEFCE funding models to set the basis for their costs, rather than income budgets in academic departments.

6.7 Institutions' resource allocation models generally attribute funding to those who earned it, but most models will use this to reflect strategy or achieve objectives. They may:

- apply weightings to subject areas that are different from the HEFCE funding models, (we found several who 'flatten' the RAE derived funding)

- 'top-slice' to fund investment and to fund areas without an income stream

- top-slice to cover overheads.

6.8 There are many variations on this: one institution we visited specifically allocated some R funds to T on the basis of undergraduate (UG) student numbers, to recognise the input that research groups make to teaching in Y3.

6.9 The standard percentages often used to top-slice or 'tax' academic departments or overheads are unlikely to reflect the actual use of those resources (although some institutions do use activity-based costing models to 'charge' departments instead).

6.10 Policies on departmental surpluses vary: some institutions permit their department to 'roll forward' surpluses (or budget underspends) to the next year; others will use a budgeted surplus to cross-subsidise other departments in deficit. Here, income allocation is only 'notional' – a planning tool.

6.11 An institution may have teaching costs (per student) in any one department that are significantly different from the 'average' funded by HEFCE; and their research cost budgets may be very different from those funded externally.

6.12 There are two implications from these practices: department income may not fully reflect the funding that its activities have generated; department spend may not be closely linked to its allocated income.

The volume of effort put into research

6.13 Academic staff wish to do research. They are motivated through their own department's interest, staff development needs, peer recognition and esteem. Transparency has found that where there is a judgement required on how to allocate time, staff will hope to allocate it to R.

6.14 Early (unofficial) findings from one high-R institution under Transparency shows 60% of 'permanent' academic staff time has been attributed to R (which includes support for R). This has lead to research costs of about 45% of total costs, half as much again as institutional research income (which totals 30% of total income).

6.15 Other evidence supports this level of effort on R – a level that is higher than is funded:

- The study for Dearing (1997) found this level of effort. The study found that the main reason was enjoyment or self-improvement, not a contractual requirement. Experience in many other countries seems similar[1].

[1] International studies (such as those carried out for Dearing, 1997) have shown similar findings. For example, in the US, they showed that institutions with no PG provision still carry out research, which is built into their workloads. The main reasons given for this were: to inform teaching, attract and motivate staff – supporting their perception that R is essential for a good reputation both nationally and internationally.

- The number of staff returned under the RAE is the result of a managed submission (by institutions) – to achieve quality ratings for prestige and to maximise RAE-based funding. There is much more activity than is returned, and, for this reason alone, than is funded.

- This is compounded by the R activity which is returned to the RAE, but not subsequently allocated QR funding, (having achieved quality ratings of less than 3a).

6.16 These all point to a level of institutional and departmental effort on R that is likely to be higher than the funding provided externally for it.

7 Is subsidy necessary, or a good thing?

7.1 The question most frequently asked concerns the extent of subsidy between T and R. It is, however, much more important to consider whether there is subsidy between PF activity and NPF. It would be poor value for taxpayers if PF activity subsidises NPF i.e. through O activities not covering their full costs, or industrial research sponsors not paying full overheads.

7.2 Costs and funding levels within units or areas of activity are unlikely to match each other. At an institution level, funding should be at least equal to costs, but, as we have just shown, they are unlikely to match at any level below this. In fact there are specific reasons for expecting otherwise:

- For investment or expansion in new areas, where external funding is rarely an option and prices, when achieved, are often lower in new markets.

This type of diversification can be a sound strategy to strengthen and protect core activity – even though in early days it will divert resources from the core, the new stimulus can return significant benefits over time;

- For reward or other motivational reasons, to help introduce or embed institutional policies.

- To attract high quality staff (who need to be offered resources upfront, without an income stream) – with recruitment being one of high-R institutions' biggest problems.

- In pricing, when costs should be only one aspect. Part-time and overseas student fees are set by each institution, and market rates should prevail here – the costs may be very different from these rates. Discounts may be appropriate in some circumstances.

- To support areas in deficit which provide an important function to the institution (to maintain a range of provision, or presence in an area, etc).

7.3 Subsidy will also be essential if an activity is deemed of significant value and benefit to another (i.e. carrying out research is considered essential for a good quality teaching environment) and yet there is an inadequate funding stream for it.

7.4 As one institution commented: 'relationships between different funding streams and schemes for the range of activity should not be too prescriptive, otherwise innovative and entrepreneurial activity (whether by the individual or institution) is likely to be restricted'.

7.5 In England, teaching and research are funded through a single block grant. Institutions are free to distribute this grant internally at their own discretion, as long as it is used to support teaching, research and related activities. (This is unlike Scotland, where teaching funds are expected to be used on teaching, and similarly, research funds on research.)

7.6 In England the question whether teaching is subsidising research or vice-versa might not, therefore, be considered entirely valid – the two can be seen as a single objective of funding. Nevertheless, discussion over the future of the dual support system highlights the importance of asking the question, albeit theoretically (what funds are required to underpin the Research Council work?); and the Government requirement for accountability for research (the Transparency Review) has meant that teaching will also be separately accounted for. This is not to say that subsidy (at least in England) will no longer be required.

8 Is there subsidy?

8.1 We noted above (sections 6 and 7) how ring-fencing fully allocated costs on each activity, and comparing them to income, is likely to show a cross-subsidy.

8.2 There is strong evidence that R activity is not covering its costs on a full cost basis. Most of the reasons for this which were noted above are directly applicable to R:

- it is implicit as a result of some of the practice and policies on investment in R, and the wish to carry out R, without funding being available to cover all that is done
- institutions are not always charging full overheads. (Transparency is likely to show that indirect cost rates should be higher than those previously calculated in many institutions)
- even when full overheads are being charged, institutions are not always recovering these
- institutions are carrying out more R than the RAE and sponsors fund or recognise.

8.3 If R is not covering its full costs, T and O must be making up the difference. However, it is likely that this will be taking place through the shared cost base – the use of common infrastructure. We do not expect to find many institutions making a financial

cross-subsidy (removing T income from T, and allocating it to R). It is a subsidy in terms of R being able to use common facilities that are significantly already funded by T (e.g. libraries), or resources that do not cost extra (e.g. extra staff time).

8.4 O, meanwhile, should be making a full (proportional) contribution to shared facilities, and in many institutions, making a surplus above this.

8.5 It is also very likely that in most institutions NPF activities are subsidising PF activities: PF R is not funded at full cost; NPF R should be (unless it is collaborative work). NPF T is likely to bring in additional income above the standard price-capped PF income; and most of O is NPF. The exception to this will be low-R institutions who do not have significant numbers of NPF students or volume of O activities. Except in their 5 or 5* departments, they will need to subsidise much of their PFR activity from PFT funding.

9 Where and how much?

9.1 In this section we summarise our views on the possible size of this cross-subsidy, and we look at this in terms of the shared cost base. A full analysis is given in the Appendix.

9.2 A detailed analysis of all the cost components in a high-R institution suggests that about 30% of the costs can be said to be fully shared or joint between R and T. In other words it would be impossible to make the cost apportionment for this percentage of costs.

9.3 In a low-R institution the level of shared costs will be less simply because there is less research and it is usually separated more clearly as an activity. We estimate that about 25% of the costs are shared in this case.

9.4 T and O contribute proportionately more than R to shared facilities, but there are variants of this finding depending on the RAE ratings and the sources of other R income.

9.5 Contributions from R to cover the cost of shared facilities will also vary by discipline and the size of the department.

9.6 Very early, indicative findings from the Transparency Review are shown graphically in the Appendix and confirm that T income is covering the cost of facilities used in teaching and is also making a contribution to shared facilities. Research also covers its costs but only makes a small contribution to facilities. Thus, on a fully costed basis the income from both T and O is being used to cover some of the costs of R.

9.7 Although teaching may appear to suffer as a consequence, this is more than offset by the benefits it gets from there being research; these are elaborated fully in the Appendix.

PART II: SHARED FACILITIES

10 Scope

10.1 In this part of the Annex we look in more detail at four main areas of shared facilities in the institution, representing the bulk of the support services. We review the extent to which they illustrate the points made in Part I concerning shared facilities.

10.2 This part looks at:

- library and information services
- computing services, including networks, centrally managed spaces with open access terminals and all IT expenditure within departments
- all teaching and research equipment
- all space and building facilities.

10.3 The main purpose is to explore the extent to which facilities are shared between T and R and whether R benefits from the provision of these resources for T and vice- versa. If any resources in the four categories are provided for other activities, then we are also interested in their use and impact on R. Similarly if other activities use any resources provided originally for R.

10.4 The questions that we answer here are:

- Is there an institutional policy on the T/R split in these shared facilities? Is it applied in practice?
- Can institutions identify the T and R use made of shared facilities?
- If they can, how does this match any internal allocations of T and R? Is there any evidence of crosssubsidy?

11 Methodology

11.1 This part of the study has adopted the following approaches:

- making contact with relevant professional bodies e.g. UCISA and SCONUL
- meeting the SCONUL secretariat and using their mailbase to establish contacts
- participating in visits and interviews with relevant staff at 6 institutions
- holding interviews and correspondence with individuals in other institutions
- developing discussions on the mailbases of Planning Officers and Directors of Estates
- analysing the questionnaire responses provided to the review team from institutions.

11.2 In our review we studied the questions in three ways: by identifying the way the resource is planned strategically to see if either R or T factors are dominant; by looking

at the internal resource allocation system to see what part T and R factors or volumes play in the decision; and, finally, by seeing what evidence (if any) exists on the use made of the shared facilities for T, R or O.

12 Information services (libraries etc)

Resource allocation

12.1 All institutions have libraries (although, increasingly, they are not formally known by that name). They usually have large accumulated stocks with a small annual budget (an average of 3.35% of the institution's recurrent budget (SCONUL, 1999) to top it up. SCONUL statistics show that 49.6% of the library expenditure covers staff costs, with only 34% on books, journals and other information provision[1].

12.2 The sum the library receives is determined in a variety of ways, most commonly by the annual adjustment of a historical figure. If it is upwards, it is perhaps to reflect in some degree inflation, which for many years has been much higher for library materials than in other areas; perhaps to remedy poor performance in a league table; perhaps as a result of pressure from students or others. If it is downwards, it is perhaps as part of an effort to cope with a financial crisis in the institution.

12.3 In some low-R institutions funding may include a discrete element intended for the support of research; this may be a proportion of funding attributable to the QR and/or DevR elements of HEFCE funding or it may be arbitrarily determined (e.g. what the institution 'can afford'). In such case the librarian may be expected to account for such expenditure against an R heading. One respondent told us of the hazards of such special allocations to boost R; special funding was given for law journal subscriptions to try to boost that department's research profile. There was not enough R income generated to sustain the subscriptions once the special allocation ran out.

12.4 The way the librarian allocates the resources received varies greatly. Usually the central support services are top-sliced, while some categories of expenditure such as books and journals may be wholly devolved to subject or faculty-based groups to decide. In other cases specialist staff within the library make the decisions aided by academic staff in each discipline.

12.5 It is rare for such allocation decisions to take T or R as factors, although it has to be said that the needs of T figure very largely in the composition of book budgets, particularly as regards multiple copies. We found one institution which made a broad assumption that all books were T and all journals were R, but this is very unusual; most library staff say any designation one way or the other is just not possible. Another librarian reported on an analysis of journals named on students' reading lists; this varied greatly from subject to subject, but was increasing overall.

12.6 The contents and services of a library, once found, are a shared resource for the benefit of all members of the institution, so that they may benefit T, R and to some extent O.

[1] SCONUL (1999). Annual Library Statistics, 1997-98.

In general all users have access to all categories of books, journals and special collections, although there are some restrictions with the latter category. The library becomes a 'public good' and most librarians would not expect to make any distinction between the benefits to R and the benefits to T. This was confirmed in a piece of research by the University of Sussex for the Follett Committee (1993) in which an analysis of many years of loan records showed that most items in their lifetime were borrowed by tutors, students and researchers. As the university commented, 'with the amount of apparently overlapping use which is apparent [from this research], pursuing the distinction between purchases for one or other, which has never seemed realistic to us, did not seem realistic to that committee either'.

Assessing usage

12.7 Modern library management systems allow the analysis of some aspects of use (typically borrowing of books) by category of user. It would be possible to monitor the use of different types of material (for example books bought ostensibly to support research or those bought for teaching), but it is unlikely that any librarian would wish to do so. In general the librarian's motivation is to maximise the use of materials rather than find bases for restricting it.

12.8 There can be no doubt that library collections and services developed for supporting learning and teaching also benefit research (for example, the core journals for students are also the core journals for researchers). Collections and services developed to support research may also benefit learning and teaching; the benefit may be marginal (for example, the acquisition of more specialised journals or the maintenance of a manuscript or archive collection) but may also be widespread (for example, the use of research funds to underpin subscriptions to large packages of electronic journals).

12.9 Research support funds may be used for a variety of purposes. Examples are:

- acquisition of specialist research monographs
- subscription to specialist journals
- acquisition of specialist databases or datasets
- purchase of hardware or software to access datasets
- employment of staff to cope with additional load (e.g. inter-library loans)
- employment of staff to provide special services.

12.10 Accounting for the expenditure of such funds is easy, in the sense of showing how the funds have been spent, but not easy in terms of showing where the benefits have accrued.

12.11 Engagement in 'other' activities will involve use of the library for various purposes, but it is unlikely that collections or services would be developed or offered specifically for those purposes. Perhaps the most significant single 'other' activity that libraries engage in is the provision of services to users outside their institution. These may be students from other institutions (via the SCONUL vacation reading scheme, for example), other students (as in the UK Libraries Plus scheme), or the general public. The latter provision is made with various restrictions (including charges).

Conclusions

12.12 In high-R institutions there is a strong assumption that the resources in a library benefit both T and R almost indivisibly and that, while students will access the latest research journals (in some disciplines more than others), staff will also consult texts that might be used principally for T. Some argue that this is a growing trend; the University of London library, for example, reports 'an increased reciprocity in the use of facilities, collections and equipment between the T and R heads…. Historic and special research collections are being used increasingly intensively by taught course students, both postgraduate and undergraduate'. In strategic plans for information services the separate needs of T and R do not usually emerge as an issue, except for the needs of students for multiple copies.

12.13 Identifying who uses books is now possible, although we cannot identify the purpose of such use. Soon similar information on users will be available from the publishers of electronic journals, but again we will not know what the purpose of access is.

12.14 We come to the conclusion that almost all library and information resources are genuinely joint costs. Very few elements of cost in a library can be wholly allocated to either T or R and, as 50% of the costs relate to staffing, there is a solid base for the joint cost element. This brings us back to John Sizer's statement: 'it may be wise to recognise that it is not possible to unscramble the joint costs of T and R and that any attempt to do so is riddled with assumptions that do not stand up to objective assessment and criticism'.[1]

13 Computing facilities

Introduction

13.1 Expenditure on computing facilities in institutions is of two main kinds: that controlled by the central computing service and that devolved to schools, faculties or departments. Substantial devolution is almost universal except for some smaller HEIs or monotechnics where all costs are still centrally controlled.

13.2 It is not easy to obtain reliable figures on the IS/IT expenditure of institutions because of the devolution. Figures are produced by UCISA (University Computing and Information Services Association) at intervals, but they are usually based on centrally controlled expenditure and are not always comprehensive. However, some institutions have produced fuller estimates of IT spend for their own purposes and these show that it can amount to 10% of the total institution's budget. In one study (of 20 institutions) a median of 5% was found.[2]

13.3 In considering the relationship between T and R and IS/IT activities, we will need to disaggregate the total expenditure because of the different T/R impacts on different

[1] John Sizer (1982) in Wagner.L ed. Assessing institutional performance and progress. SRHE. Guildford.

[2] 'Information Systems and Technology Management Value for Money Study' Management Review Guide 98/43; HEFCE, SHEFC, HEFCW, DENI; Total IS/IT expenditure in relation to total institutional recurrent expenditure 1996/97; Lower quartile 4.21%; upper quartile 5.48%.

parts of the IT/IS spend. Within the two main categories, already referred to, there are the following sub-categories:

Centrally managed resources:

- core infrastructure: main hardware and servers, local network costs, networked PCs, high performance computing, UKERNA subscriptions, regional network costs
- central staffing: senior IS management, network managers, webmaster
- specific services: open access terminal rooms
- customer services: help desks, maintenance, support services, training, web designers.

Locally managed resources:

- local infrastructure: specialist LANs (eg library), support staff
- student services: local PC networks or clusters, teaching/learning software, CAL
- staff services: research systems and support.

13.4 In recent years the balance of expenditure has swung from the central service to departmental and faculty budgets, and unfortunately it is in the latter category that cost information is hardest to obtain.

Strategy and resource allocation

13.5 We sought information from institutions on the degree to which there was a connection between their overall strategy and IS spend. As all institutions now have information strategies, they interpreted our question in that context. The relationship between the information strategy and the teaching and learning strategies and research strategies is a triangular one, since the information strategy should serve them both, as well as fit with the overall strategy. However, since all these strategies are being produced within different timescales the connection cannot be guaranteed. Also the information strategy is likely to be revised more frequently due to technological factors.

13.6 It is clear that institutional information strategies usually relate to the scope and size of the overall infrastructure and the scale of expenditure, although with some set targets for such things as student:PC ratios and terminal access or plug in points. Thus, a common response to our questions about the allocation of resources to the computing service was that it was driven mainly by the central IS strategy rather than by any strategies for teaching and research

13.7 The method of allocation to faculties and schools is less consistent. In some institutions a formulaic approach is followed (which inevitably has a base in student numbers), while in others a bidding system allows an element of judgement to be used (which could include R and T factors).

Use of IS/IT resources

13.8 The analysis of IS/IT cost categories in paragraph 13.3 above can be used as the basis for examining what information could be found on the use of IS/IT resources for T and R purposes. In the centrally managed category of resources, most of the costs are central staffing and infrastructure and, as such, are joint costs and hard to apportion to T or R. The only elements which may be clearly allocated are the cost of high performance computing to R and the costs of open access PC rooms which are mostly T. We had assumed that they were wholly T, but some institutions have told us that their postgraduate research students use these facilities if they are not able to get their own desktop terminals.

13.9 The full range of computer services is intended to serve both staff and students, and the respective benefits to T and R could be calculated if timesheets were used (but they are not). In costing models a possible approach is to use a per capita basis with staff and students assumed to benefit equally. This would allow an approximate estimate of the benefit to R to be made, once information was available about the staff effort devoted to R.

13.10 Locally managed resources within schools and faculties may have a small element of overhead such as the cost of technicians or special network subscriptions, but are otherwise more readily related to T or R. It is not unusual, for example, to find locally sited open access terminal rooms for student use, with specialist packages and applications such as CAL readily available. Similarly, some IT facilities are wholly related to departmental R programmes, where the institution has decided to pump-prime for strategic reasons some specialist line of R ahead of external funding.

13.11 The implications of this analysis are that it is not possible to make any reliable generalisation about the use of IT resources for T and R without a great deal of further detailed costing and data collection. Most institutions could of course provide analyses of the users of their central networks, if asked, but this would not say anything about the purpose of such use and would only give us a partial picture (since so much IT usage is not managed by the central service). What we can conclude is that the core infrastructure expenditure on IT is a shared cost which benefits both T and R, and almost all R would not be possible without it. The national and metropolitan area networks are a fundamental tool in all research.

13.12 As teaching begins to move more towards using the internet as a resource base – and a communications medium for tutorial and chat room discussions – it is likely that the use of the networks taken by T will increase dramatically. Already, staff are finding that tutorial support by e-mail is much more time consuming than tutorial support face to face. This greater contact time has IT resource implications also.

13.13 This growth in the demand for IT access for T raises the question whether there are any implications for R. The answer may lie in how institutions treat demands for larger IT budgets, whether at any time they introduce charges for student use of the internet or computing, and how they handle the issue of student-owned computers. There will however be greater competition for IT resources in future.

Conclusions

13.14 We have seen that IT is essential to R and is becoming similarly central to T. This applies in all institutions with R activities regardless of their research profile. There is also a complex relationship between the various institutional strategies for IT, R and T. How these fit together is not always clear and our survey showed that decisions on IT were influenced by IT strategies more than R and T strategies. The extent to which the IT strategy is itself drafted to fulfil the T and R strategies is not known.

13.15 We have also shown how a large proportion of IS/IT expenditure is a shared or joint cost. If it were true that the PCs sitting on staff desks are the main indicator for any apportionment (since most of the support and infrastructure costs are there to support those PCs), then we can say that the split of those costs would follow an analysis of staff time between T and R. Some expenditure is clearly identifiable with T such as the costs of open access terminal rooms for students.

14 Equipment and space

Introduction

~~1.1~~14.1 In this section we cover T and R equipment and the physical infrastructure of the institution. The bulk of these assets have been accumulated over decades, if not centuries, with no obvious attribution in terms of teaching or research.

Resource allocation

14.2 Since HEFCE adopted a formulaic approach to its equipment allocations, some institutions have abandoned the system of a central equipment fund, with the concomitant bidding process, in favour of a local formula. This has the effect of decentralising all decisions on whether to support the needs of T or R in the allocation process.

14.3 In those institutions where a central equipment fund still survives, the rationale and criteria behind the allocations vary as one might expect. They are frequently dominated by IT needs, which is the largest single category of expenditure. In institutions with a low R profile and a selective R strategy, the criteria for allocating equipment funds may often be directly linked to that strategy. For example, the current review of CollR funding in low-R institutions has found that up to 20% of the funds have been spent on physical infrastructure costs in some institutions.

14.4 High-R institutions no longer rely on their annual HEFCE equipment allocations for their equipment needs, as these are met through mechanisms such as the Joint Infrastructure Fund, the Joint Research Equipment Initiative and contracts with Research Councils and other sponsors. Thus, the bulk of their equipment is directly linked to, and funded by, R projects.

14.5 In some institutions the costs of central support services are attributed to academic cost centres. In such cases the costs of space are reflected in the allocations of the maintenance cost of buildings and some centrally incurred costs such as insurance. These are usually allocated on a cost per m^2 according to the space used by different cost centres or groups. This tells us little about the relative usage of such space for teaching or research.

Use of equipment and facilities

14.6 Institutions' facilities are sometimes given names relating to their primary purpose; undergraduate chemistry teaching laboratory, XYZ Research Centre or the postgraduate common room. However, this label does not always reflect what happens in practice, and sometimes other users share the facilities.

14.7 The design of research laboratories often limits the extent to which they can be used by undergraduates. The stereotypes are large empty teaching laboratories (not yet filled with experimental kit by the technicians) and small crowded research laboratories bursting with esoteric equipment. The latter cannot possibly accommodate a conventionally sized, first or second year laboratory class, although it may take small project-based groups from the third or fourth years.

14.8 Equipment is usually given a T or R label on its acquisition, which may not always be echoed in actual usage. Thus, as we have seen above, PCs intended for undergraduate use are used by research postgraduates, and our survey told us that R equipment is frequently used to support teaching, particularly in third year science projects in high-R institutions.

14.9 Once a research project has ended, it is common for the research equipment to be made available for departmental use – which will include T (and there is no longer a recorded annual cost for this). However, this may be more theory than practice in some departments. As one institution commented: 'in practice the research line continues, and, although the position will vary across schools, the tendency has been for the research group to retain the equipment for research purposes only. Obviously subsequent use will depend very much on the type of equipment'.

14.10 Most institutions attempt to collect information on the use of space; however, the key objective of this exercise is usually to identify under-utilised space with a view to its re-allocation. This means that the information obtained focuses on whether the space is used, rather than what it is used for. Indeed, the recent HEFCE Estates Management Statistics Project [1] suggested that it would be ideal to have an analysis of space use by 'business categories' such as teaching, research, and other activities, but concluded that 'such analysis constitutes a step too far at present'.

14.11 Some institutions do have this information (for internal purposes) – and it is likely that this number will increase as one of the means of satisfying the costing standards under the Transparency Review[2]. HEFCE have undertaken some survey work in this area

[1] HEFCE, Report 99/18

[2] Costing standard 4 (attribution of other costs to activities) which states that drivers for larger cost pools (such as estates) should be verified by surveys etc.

which indicated that 25-44% of space (depending upon definitions) was allocable jointly to T and R[1].

14.12 In analysing the allocation and use of facilities, the status of the institution is a key factor. Looking at a spectrum of institutions, we would expect to find an obvious simple pattern:

- High-R institutions will have clearly designated R space and equipment, and will receive external funding for much of it, but because R and T are an indivisible part of most academic staff work patterns, T use of R facilities will happen regularly. One university told us firmly: 'since we teach in a research environment we use equipment for both activities, irrespective of the source of funding'. Undergraduate project work increasingly involves the use of research laboratories and equipment. As one might expect, there is little benefit in the other direction; there is no R use of equipment bought for T. One clear area of shared use is the office space of research-active staff. It can be argued that part of it should be allocated to research, rather than to teaching, as has traditionally been the case.

- Institutions, which are not yet fully high-R but are striving to be so, will have less dedicated R space and equipment and there will be more shared use of resources between R and T.;

- Institutions with little R, but which plan it strategically, will have little designated R space and equipment, which ironically may not be greatly used for T.

- Institutions with a strong commercial activity may have buildings and equipment which are dedicated for that purpose, such as short course centres and testing equipment. These are not shared by T or R in view of the difficulties of retaining guaranteed access for commercial paying customers.

14.13 Several institutions across the spectrum of the sector specifically commented that they 'favour maximum use of multi-purpose equipment'.

14.14 Institutions with teaching hospitals are, as ever, a special case. In medical and dental schools some researchers are able to use facilities owned by the NHS and some of these facilities are also used for teaching purposes. This exchange may be covered by the traditional 'knock for knock' arrangements or may now be the subject of commercial agreements. Responsibility for ownership and maintenance of buildings can be very confused under 'knock for knock', which obviously clouds issues about their use on T or R.

14.15 Where external customers use institutional equipment and facilities, costing and pricing mechanisms will now usually apply and they will be charged for that use. The aim is to ensure that institutional T and R funds benefit from the use of resources bought for them. T and R can also benefit in practical terms, since it is not uncommon

[1] HEFCE survey, 1997. 44% of ASC space was allocated to joint T and R; the rest was allocated to T or R. 25% of total net space was allocated to joint T and R.

for equipment bought for commercial purposes to be used for teaching or research purposes.

Conclusions

14.16 In this topic there is the greatest difference between types of institution as the level of equipment and its use profile vary greatly. In general, equipment is the most allocable of the resources we have been considering in this chapter.

14.17 As regards the shared use of buildings, we have little solid information since most utilisation surveys do not provide answers. The range of shared use varies considerably owing to the type of institution and its level of research activity.

14.18 However, there are instances where T benefits from the space and equipment purchased for R, both because staff in high-R institutions often involve their senior undergraduate students in ongoing research and because research equipment is sometimes used in teaching. This latter point arises also when research contracts come to an end; although the agreement usually specifies that the equipment is the property of the sponsor and may be returned, it is very rare for this to happen. As a result the institution acquires a new asset. In contrast it is very rare for R to benefit or use equipment bought for T.

15 Analysis and summary

15.1 Our conclusions for the three categories of resource considered in this part of the chapter present a mixed message and are as follows:

- libraries: almost wholly a shared cost benefiting both T and R
- IS/IT spend: partly a shared cost and partly allocable to either T or R
- facilities and equipment: little is shared, as most is clearly allocable to T and R
- space: most allocable to T or R; the degree of sharing varies greatly.

15.2 For many of the shared facilities covered by this chapter we have seen that they benefit T and R equally. Phrases like ‘joint use’, ‘public good’ and ‘progressive integration’ occur in all the responses to our questions. These reasons mean that the managers of the resources are reluctant to make any split between, or attribution to, R and T. Some are doing this for the purposes of the Transparency Review, but are currently using formulae or proxies that are convenient rather than fully robust.

15.3 Although we found that institutions were in most cases moving towards collecting information on the use made of shared resources, this concerned capacity and utilisation, rather than information on the activity being undertaken. Transparency Review requirements may change this.

APPENDIX

The size of shared facilities

1 It is difficult to obtain a clear view of the total size of the shared facilities (refer to Part II for a discussion on this). However, by making some brave assumptions, the following figures can be broadly derived.

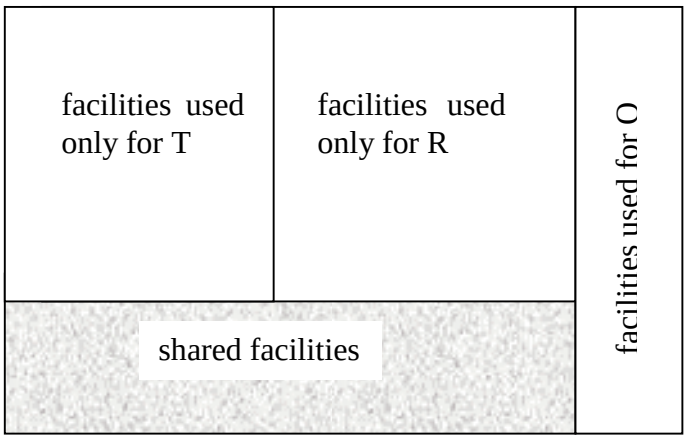
2 For a high-R institution:

Area of cost	Possible size of this area in an insitution (% total costs)	Possible amount attributable to shared facilities (as a % of total costs)
Central services (secretariat, finance, personnel etc – not directly allocable to T, R or O eg excluding registry, residences, research administration)	8%	7% (1)
Libraries/learning resources/IS/IT	6%	4% (i.e. 60% of costs in this area) (2)
Premises	10%	3% (3)
Academic staff time – assumed to be	25% of institutional costs(5)	
35% R		
10% O		5%(4) (ie 20% of 25%)
20% administration/mgt		5% (again, 20% of 25%)
35% T	re T: say 1/6 relates to Y3/Y3/Hons/PGT i.e. 6%	1%
Other academic department costs: staff and non-staff, including equipment (not directly allocable)	say 10%	5% (say half)
All other areas – directly allocable to T, R, or O	41%	0
Total all areas:	100%	30%

Percentages of total institutional costs are based broadly on figures reported for England in: Resources in HEIs 1997/8, HESA.
(1) 30% of finance might be shared (management accounts, financial accounts, payroll etc, but excluding fees and research support; but most other areas here would be shared 100% – say 90% overall for these central costs.
(2) 80% of library could be shared; and 50% of IS/IT – say 60% overall.
(3) 25% – reflecting the common space, including for academic staff. A survey by HEFCE in 1997 indicated that 25% of (total net) space was allocated as joint T&R.
(4) Reflecting the scholarship in R that is informing T. Calculated at 20% of academic effort (on the basis that T intensive scholarship time might be 20%).
(5) Time of academic staff excluding those reported under research grants and contracts.
(6) Equipment is not shown separately.

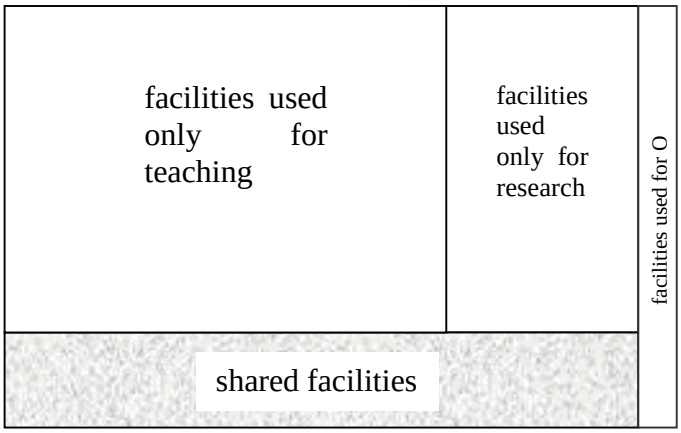
3 Alternative assumptions and figures could be readily substituted. The above is only intended to illustrate the potential size of the 'shared facilities'.

4 This can be shown diagramatically as follows:



5 The level of shared facilities (as a percentage of total costs) will be less in low-R institutions, because of the separate nature of much of the research. Here the concept is more difficult to quantify because of the teaching focus of the institution – by definition there is not much research, yet it still requires the infrastructure and facilities made available by teaching.

6 Using some very broad brush assumptions, the following diagram for a low-R institution might show the following:



7 The shared facilities in low-R institutions will be a slightly lower percentage of the whole – perhaps around 25% rather than the 30% calculated for a high-R institution above (less shared estates, less shared department costs). However, most of the facilities previously categorised as shared should remain so, despite the lower usage of these. We cover use when we consider funding, below.

Which activities are funding shared facilities?

8 Overall, it is likely that other activities and teaching (particularly NPF teaching) funds are contributing more than proportionally to shared facilities (i.e. more than would be allocated to them on some proxy of use). Early findings from Transparency are providing evidence of this.

9 The extent of the contribution by research to shared facilities will vary by institution, and by department. We considered whether it varied by RAE rating. We identified three models:

A A high RAE rated department (4 and above) will contribute less than its proportionate share to shared facilities because research contract and grant work is, in general, funded at less than full-cost.

However, where its research work is at full-cost recovery (and the income passes to the department), and there is no speculative work taking place (i.e. all research activity is for external sponsors), then it is likely that research income will cover its full share of shared facilities.

B In a department rated 3a which receives less funding council grant than a higher rated similar sized department,it is as unlikely as the higher rated department to be achieving full cost recovery on contracts. It is therefore unlikely to be contributing more to shared facilities than the higher rated department (unless its staff costs on research are, proportionate to funding, lower than those in the higher rated department).

It may be allocated more than it earns internally – it may well be investing hard in achieving higher ratings. It may not be returning all of its staff who do research. It is therefore likely to be contributing less to shared facilities than an equivalent sized higher rated department.

C A department rated 1 or 2 receives no QR funding council grant, but may receive some under CollR. Therefore, much of its research activity, including speculative work and unfunded work returned under the RAE, and probably many of its PGR studentships, may well be funded from teaching and other activities.

10 This analysis is highly simplified, since in practice, there are numerous variations. For example:

- In some (lower RAE rated) departments, gaining a large charitable or Research Council grant might reduce the level of contribution that can be made to shared facilities. These contracts might cover the marginal costs and some overheads, but without a corresponding level of new funding through the funding council grant (which is based on historical performance, not a forecast of future performance), the extra overheads from the shared facilities now attributable to that department will not be covered. EU or low recovery UK Government projects would have a similar effect.

- Some individuals provide publications for the RAE based on Research Council work (or other externally sponsored projects). Their costs of research may be lower (and contribution therefore higher) than in another department where the publications are not so closely related to a project – the research has had to be funded internally.

- The standard RAE requirement for up to four peer-reviewed publications does not identify the quantity of work (and effort) that has been spent – and this effort will vary widely, along with the costs.

- The time spent doing a highly rated piece of work may be the same as that required for a lower rated piece of work – HEFCE funding will not reflect this (nor was it ever expected to do so).

11 The level of contribution that departments can make from research to cover the costs of shared facilities will also vary by discipline. For example:

- Departments in the arts and humanities fields have less external funding available for their work (and, before the Arts and Humanities Research Board, no Research Council funding). Their contributions to shared facilities could not therefore be as high as in science departments.

- Some departments at the generic ends of their subject – e.g. pure maths, physics, languages – have also had limited opportunity for external funding.

- Medical and dental schools have a particular complexity that will start to be better understood as a result of Transparency – but in some years to come. Currently the inclusion of NHS clinicians in the RAE quality factor (although not the volume factor) can affect the level of funding to these departments.

12 It may depend upon the size of department. Larger departments can prove more economical, for a given level of activity, in terms of administrative and management overheads. This will apply equally to teaching activity as it does to research.

13 It will depend upon the style of management used in the department, and how successful it is. Some departments (many more once Transparency has been introduced) have a clear understanding of their strengths and are able to implement strategies to address financial weaknesses. Others do not, or cannot.

What does the Transparency Review suggest?

14 Figure 1 below indicates the possible relationship of costs and income for teaching, research and other activities in a typical high-research institution.

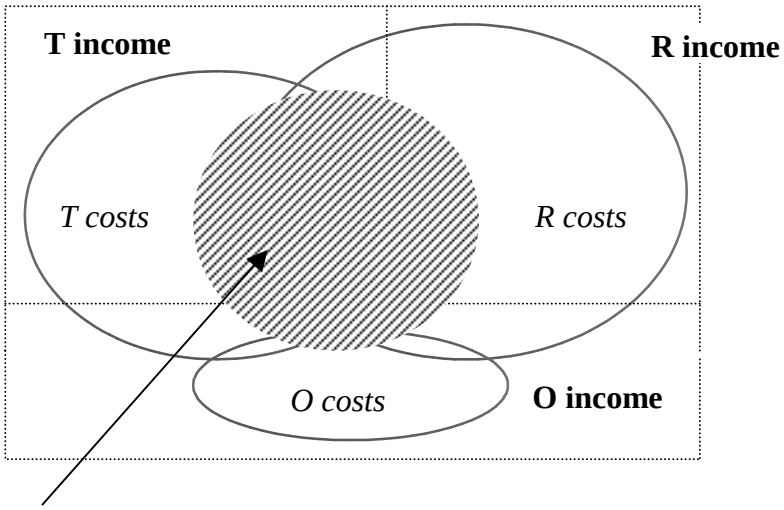
15 Transparency will provide a fairly clear indication of the level of subsidy at institutional level (and, for institutional internal purposes, at discipline or even department level). Based on very early data (informal and unreviewed), it is possible to conjecture what this level might be. (The following must be regarded as indicative;

it is not representative of any one institution; and it will be reviewed when more Transparency information is available).

16 Figure 1 is based on the assumptions that:

- shared resources total broadly one-third of total costs
- research, in terms of effort, is half as much again as teaching
- research and teaching income is broadly the same (with a significant amount from NPF teaching)
- other activities make a surplus.

Figure 1. Costs and income in a high-research institution (illustrative)



17 This Figure shows that teaching income is covering the costs of facilities specifically used for teaching and is making a significant contribution to shared facilities; and that research income is covering the costs of facilities specifically used for research and is making a small contribution to shared facilities.

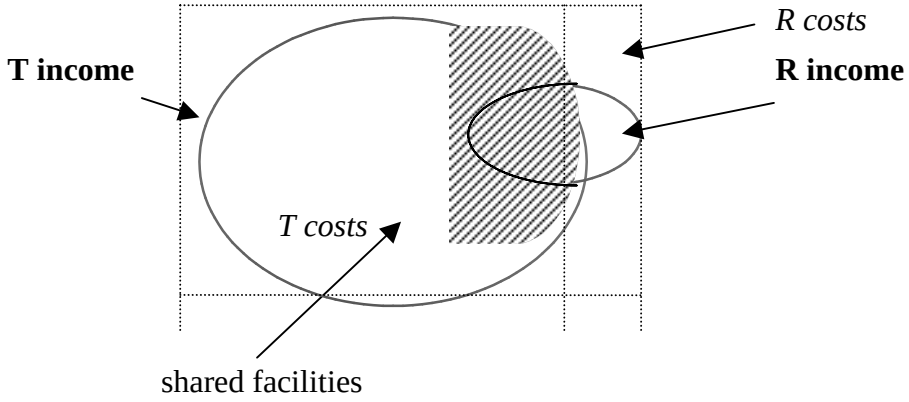
18 A similar diagram could be drawn for a low-research institution. This is given in Figure 2 below. Here we have assumed that:

- income is made up of, say, 90% teaching 10% research and a very small amount from other activities
- shared facilities are broadly 25% of total costs

- RAE and income from external sponsors cover only a small amount of the effort on research: there is considerable 'own-time' spent on research for CPD and other reasons; many PG research studentships are funded by the institution (fees remission and maintenance/bench fees); there is specific investment in research centres to generate higher quality and more volume research (and income from other activities)

- much research is done in 'own-time' at no additional cost to the institution, but is shown here at full-cost (as in Transparency).

Figure 2. Costs and income in a low-research institution (illustrative)



Is teaching being disadvantaged?

19 If research is not providing a proportionate contribution – i.e. is covering less than could be calculated from its use of these shared resources – is teaching being disadvantaged? There are several points that can be made here:

i. The shared facilities (or some slightly lower level) would have been provided even if there was no research. Without research, teaching (and other activities) would have had to cover them. Any contribution by research (even if low) must therefore benefit teaching.

ii. Much of the time on research, especially in low-research institutions, is provided at no additional cost to the institution.

iii. If non-staff facilities (libraries, space, equipment) are not at maximum utilisation (which is often the case) then both activities should be able to make the use they need of these (subject only to a certain loss in flexibility) at little disadvantage to the other.

iv. There is no evidence that teaching has suffered as a consequence of an increasing activity in research. Performance indicators have not shown this. Any pressure on teaching (high SSRs etc) has probably been as much as a result of efficiency savings, pressure for increased accountability, and increased administration demands, as much as from research.

v. There is more to be gained in cross-benefits from research to teaching, than there is concern about low contributions from research to shared facilities.

- 20 We talked in earlier chapters about the potential benefits to teaching from research. In terms of resources, these include the following: SSRs are generally lower in departments that receive research funding, than in those that do not. It is a common fallacy that this means there is more time for teaching *per se*. If the additional staff (bought by the research funds) do research, then this will not be the case.

  Early Transparency figures show that PF teaching costs in high-R institutions might sometimes be lower pro-rata to income than in a low-R institution (and PF teaching income is, broadly, the same per student.

  However, this increased staffing allows greater selection and flexibility in the allocation of teaching workload, and allows greater flexibility when providing tutorials, or 'availability' for students. One institution commented that it can help 'guarantee' small group teaching. These provide direct benefits to teaching.

- Equipment is purchased for research that is often then available for teaching.

- Quality research, with its funding, often brings with it other activities and NPF students. These then bring in more funding for teaching facilities and for shared facilities.

- UG Y3/Y4/Hons and PG teaching often work closely with research groups, using research facilities.

- Economies of scale from an increased size of institution, as well as a broader notion of 'added value', both benefit teaching.

21 However, it seems that, on a full cost basis, other sources of income are being used to cover some of the costs of research. There is no reason why a core higher education activity such as research should be funded on a marginal cost basis. Proper full-cost funding for research would enable institutions to provide a fit-for-purpose infrastructure, and to use teaching (and other activities) funds properly to improve quality, allow innovation and introduce appropriately economic and efficient methods.

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