Reform of Higher Education Finance

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REFORM OF HIGHER EDUCATION FINANCE
What are the practical issues when implementing change?

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ABSTRACT

This paper examines recent European experience with new mechanisms for funding higher education institutions developed to respond to increasing institutional differentiation and proliferation, a more dynamic educational and curricular environment, changing research priority and multiple source and specific purpose funding. Variations in funding mechanisms are described, including those supporting advanced scientific training and research. Special attention is given to the role of funding councils and other kinds of buffer institutions, as well as to experience with normative financing and targeted funding for teaching and research.
REFORM OF HIGHER EDUCATION FINANCE

What are the practical issues when implementing change?

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Section I of this paper is a brief introduction which sets out some of the factors which are changing the policy environment for higher education, and which therefore are reasons for reforming systems of higher education finance. Section II looks at features of existing systems which may be the source of problems, and which may require reform. Section III examines some of the features which typically are the result of financing reforms, and discusses some of the problems involved in making them work. Finally, Section IV has a brief discussion on issues of timing and sequencing of reforms.

I: Introduction.

1.1 The main focus of this paper is the implementation of reforms to the financing of Higher Education. The financing of Higher Education has to be seen in the context of:

(i) public policy goals for higher education, and

(ii) the changing structure of society and the economy.

A reasonably clear understanding of (i) and (ii) is required if one is to design appropriate financial structures, and it follows that great care has to be taken in recommending financial structures and models on the basis of experience gained from other countries. This having been said, there are some aspects of policy and social structure which are in general terms common to most countries, especially emerging market economies.

1.2 The first common feature is the emergence of mass higher education. It is increasingly apparent that the changing nature of labor force demand and changes in peoples' aspirations have driven policymakers to adopt enrolment targets which are very high by historical standards (often in the range of 20% to 50% of the relevant age cohort). Higher education systems of the size necessary to cater for such large enrollments must of necessity be more highly differentiated than has been the case hitherto, and will generally have a large number of separate institutions of higher education (IHEs)[1]. The number and diversity of IHEs seems to be an important common emerging feature of educational systems. It requires financial mechanisms which are different in many cases from those which have been used in the past.

1.3 The second common development is the increasing emphasis on meeting changing educational and manpower requirements. This is related to the emergence of rapidly changing technologies which is impacting on the nature of an increasing proportion of jobs. Higher Educational curricula are no longer as traditional in content and as slow to change. IHEs need both academic and financial autonomy to cope with this more dynamic educational role. The need for financial autonomy arises because curricular changes can have significant cost implications, and IHEs need to be able to assess the financial implications of these changes, and to some extent at least need to have the financial capacity to cope with them. The funding mechanisms in place can hinder this process if they are too rigid, or if they give the wrong incentives: conversely the right funding mechanism can be a valuable aid towards coping with educational and curricular changes.
1.4 A third factor is the increasing involvement of IHEs with industry in terms of research activity. This is partly due to the increasing awareness on the part of business of the importance of R & D, and it implies that research in IHEs may have a greater applied content than before[2]. Applied research may have a shorter-term focus than basic research, and projects may have a term of one to three years; by contrast much basic research is the expression of the career interests of academics and researchers, and as such is organized on a very long-term basis. In terms of funding, basic research may not impose the same demands on the higher educational system in terms of flexibility, i.e. frequently re-directing research resources into new projects and priority areas.

1.5 Finally, IHEs are increasingly being financed from a multiplicity of sources. In part this is because of developments already noted: for example greater amounts of more applied research may imply significant funding from industry or special research funding agencies. Curricular innovations in response to labor market developments may also be facilitated by separate funding, or may be undertaken with the object of inducing such funding. Traditional funding mechanisms as implemented by ministries of education may not work efficiently in a multiple-source funding environment[3]. Funding which is sourced from a variety of agencies, and which may be earmarked for a variety of special purposes requires (i) a sophisticated internal management structure within IHEs and (ii) an overall funding mechanism which ensures that IHEs are subjected to appropriate incentives for efficient behavior.

1.6 Overall therefore, new funding mechanisms have to meet demands imposed by (a) institutional differentiation and proliferation, (b) a more dynamic educational and curricular environment, (c) changing research priorities, especially at the more applied level, where interaction with industry may be important, and (d) multiple-source and specific-purpose funding instead of global block grants to IHEs.

II: Existing Systems.

2.1 Systems of higher education funding almost defy classification, as there is so much administrative differentiation from country to country. In some important cases (most notably the United States) it is hardly realistic to speak of a single "system": there are radically different arrangements as between individual States, and as between Public Sector and Private Sector institutions. In Europe, it is more realistic to look at a series of national systems, which differ profoundly in many respects, but which may have some basic features which are relatively common, and which give rise to common problems.

2.2 Virtually all European higher education systems are dominated by State finance, and have significant and varying degrees of state ownership and control. In almost all cases, higher education is provided at a price (i.e. tuition fee) which is either zero or significantly below cost, and in many cases there are firm legal and even constitutional foundations for this policy. Reforms to the finance of higher education in Europe must in many such cases take this aspect of policy (the virtual absence of significant tuition fees) as given. This may lessen the scope for really radical changes, but it should not be regarded as nullifying the case for reform. There are two main reasons for this: (i) not all IHE costs are for tuition, and there may be important policy choices in the financing of research and other areas of activity even with "free" tuition; (ii) the efficiency with which resources are used for teaching may be significantly influenced by the financing mechanism used to direct those resources to IHEs.

2.3 A relatively recent and comprehensive study[4] of public expenditure on higher education exists for the 12 EC countries. It is not a study of funding procedures in the full sense as it focuses on Public Expenditure on IHEs, rather than the overall income determination of IHEs, whether from Government
Grants, Tuition Fees, Research Grants, Endowments, etc. Despite these limitations there are general features of existing public expenditure systems which are worth noting, as they are relevant to many issues which arise when looking at reform of funding mechanisms.

2.4 The first feature is the funding basis. This refers to the identification of what is to be funded, and there are in general three possibilities: (i) input, (ii) throughput, and (iii) output. Input funding is used in all 12 EC member states, and the only significant exceptions are in France (input plus throughput funding for some items) and the Netherlands (input plus output funding for current items). Input funding refers to the provision of funds to cover the costs of personnel, building maintenance, material supplies, etc., which are all inputs into the educational process. Output funding is when some measure of output (number of graduates, perhaps with an adjustment for quality) is used as the basis for determining funds. Throughput funding is intermediate, and is in practice hard to distinguish from input funding. In principle outputs are superior to inputs as a funding basis: in practice output funding is difficult to implement simply because outputs (graduates) in any year result from inputs of several previous years, depending on the length of courses[5]. Internal reforms which produce improvements in outputs will automatically generate more funds under an output system; if these reforms consist of an improvement in the way in which a given budget is allocated or in which existing resources are deployed, then the incentives should work. If however reforms involve some initial net expenditures, there will be a financing problem in bridging the gap between the reform and the financial reward. If IHEs have little or no borrowing powers, then output funding may be of limited effectiveness.

2.5 The second feature of existing systems is the determination method used for funding. There are two main possibilities here: Normative and Reimbursement. Normative methods are based on the use of general "objective" criteria, for example unit cost per student in various fields. Reimbursement is usually based on the submission of budgets from IHEs for the coming year's activity, and is often based on last year's allocation plus adjustments for inflation and changes in staffing, etc. For current expenditures, Normative methods are used to some extent in seven of the twelve EC members, and in four of the five largest members (France, UK, Spain and Italy: Germany being the exception). The large number of individual institutions in large countries make recourse to general financing norms almost unavoidable: the exceptional case of Germany is probably explicable by the fact that higher education is largely the responsibility of the Lander.

2.6 The third feature of existing systems may be termed conditionality[6]. This refers to different conditions which may be imposed on the recipient IHE by the Government or funding agency. Some of these are matters of administrative routine such as the specification of financial audit procedures. The most important condition from the perspective of the present paper is however the degree of specificity or earmarking which is imposed. Minimum conditionality in the form of lump-sum grants to IHEs are found in three EC members: UK, Netherlands and Spain. In all other cases funds are allocated to specific purposes (e.g. personnel, administration, equipment, etc.), and transfer of funds from one item to another may be severely limited. A high degree of earmarking tends to be found where there is Reimbursement rather than Normative funding; also earmarking tends to apply in the intertemporal sense: unspent funds may not be carried forward to the next budgetary year. Sometimes earmarking may be quite detailed, with over five separate categories: a common pattern is to earmark funds for separate personnel and materials ("non-pay") categories. Earmarking of personnel items is linked to the pay and conditions of employment of University staff, which are generally outside the control of individual IHEs[7].
2.7 The financing of teaching and research has traditionally been on a joint basis: grants to IHEs were intended to cover both types of activity. This arrangement has a certain continuing validity in that teaching and research may be considered joint activities: active researchers communicate their knowledge to students, especially graduate students. Also graduate students are often engaged in research projects as part of their education and professional training. Formula (normative-basis) funding of teaching may take this into account when graduate students are assigned high weightings[8] in the calculation of the number of "fulltime-equivalent" (FTE) students to be financed. Formula funding will usually incorporate the relatively expensive research costs in Science and Technology into the relatively high per-student unit cost norms used to allocate funds.

2.8 In the 1980s there have been developments in several countries which have changed the financing of research. Arising from a commonly perceived need to link academic research and industrial/technological developments, public policy has focused on increasing the applied research activity of IHEs. Also, the longer term strategic value of basic research has been more appreciated by governments, and specific funds have been directed to this area. Separate research councils have emerged on a widespread basis as another source of funds for IHEs. The organization of such councils varies considerably from country to country, and the degree to which research council funds have been additional or have displaced more traditional forms of finance is difficult to identify. What is certain is that separate sources of research finance make the overall financial management of IHEs much more complex, and demand new levels of internal managerial skills and information systems. Significant research council finance also interacts with the basic finance of teaching (or joint teaching-research) activities, and in many cases these effects have not been sufficiently appreciated[9].

2.9 The proliferation of separate national research financing programs has been accompanied by a significant international developments, most significantly in the form of EC initiatives. The main EC programs in the research[10] area (e.g. copernicus, etc,) have generally been organized on the basis of invitations from research teams to bid for project funding in specified areas. As in the case of national research financing, this process has called for the development of managerial skills in IHEs, and of institutional support for those bidding for EC funding.

2.10 Looking at the existing systems of higher education finance and their evolution, there are two issues which are central to the design and implementation of reforms:

(a) the optimal configuration of input versus output funding, normative versus reimbursement funding and lump-sum versus earmarked funding.

(b) the interaction of new sources of funding (research councils, the EC, industry, student fees) with existing public budgeting arrangements.

2.11 Optimal funding configuration. In principle, resources will be allocated efficiently when outputs are the basis of funding, when normative allocations are used and when grant earmarking is minimized. Conversely the worst situation in principle is one of input-based, budget-reimbursement and heavily earmarked grants.

(a) The reason for preferring output to input as a funding basis is obvious in principle (outputs reflect the objectives of the system) but the practical difficulties with an output basis are considerable[11]. However some marginal funding may be allocated on an
output basis, and as economic incentives generally operate at the margin, small amounts of money may have significant effects when allocated in this way.

(b) Normative funding may be used increasingly instead of reimbursement, not because of optimality considerations, but because of the increasing size and diversity of higher education systems. There are two main efficiency problems with reimbursement funding. First, it gives IHEs incentives to make inflated budget submissions and can leave to wasteful game-playing between IHEs and funding bodies; transparent cost norms as a basis for core funding should largely eliminate this behavior. Second, it can give rise to unwanted displacement effects in that when IHEs submit budgets to funding bodies, the latter will take any IHE revenues into account in determining the grant, which in effect becomes a residual. This residual grant problem undermines incentives to generate revenues.

(c) Earmarking leads to inefficiencies in that it removes decision-making powers over resource allocation from those who ought to have the most information to make rational decisions: managements of individual IHEs. Surplus funds under one budget heading which cannot be transferred to another heading, or which cannot be carried forward to the next financial year will get spent on items of less value to the IHE; furthermore the incentive to economize and generate savings in the first place may be blunted. However there are practical reasons why a degree of earmarking may be advisable, and which relate to conditions of employment of IHE staff. In most European countries IHE staff enjoy public service status, which salary rates determined by Government rather than by the direct employer. They also enjoy a significant degree of job tenure. In these circumstances, personnel budgets become fixed, long-term costs, and IHEs which transferred savings in, say materials expenditures into extra hires, might incur problems in future years. For this reason, earmarking maximum expenditures on long-term commitments has a function in protecting institutions from short-sighted decisions. Within this constraint, there is still a strong case for maximum flexibility. The two EC countries which have had the most radical funding reforms in recent years are the Netherlands and the U.K. In both cases one finds recourse to formula funding and to block grants. One also finds recourse to widespread assessment of teaching and research effort, which in some cases represents an attempt at introducing an output-based element into funding. Also one finds that while grants are not earmarked, IHEs are liable to hire on externally-determined salary scales, so they have to make very careful decisions about long-term commitments in a situation where long-term funding may not be guaranteed.

2.12 Finally, it should be noted that funding systems will work well only if certain conditions are met: procedures need to be transparent, and IHE managements need to have access to appropriate information, and need the professional skills to assess and act on that information. For this reason reforms may not translate easily from one country to another: there are differences in administrative culture, in the stock of administrative and managerial expertise, and in the overall political context which can be important.

2.13 Interaction of Funding Sources. If an IHE has a single source of funds, for example a funding council or a ministry of education, then reimbursement of budgetary requirements is relatively straightforward. Once there are additional sources of revenue, the situation becomes more complex. If an IHE has fee revenue or other self-generated income, then reimbursement of budgetary needs will
almost inevitable take this revenue into account and the grant will be a residual. The incentive to
generate revenues will therefore be diminished or even eliminated, or else the IHE will resort to using
its own revenues for a variety of "off budget" activities which may be peripheral to the prime objectives
of the institution. If, in addition there are separate funding sources for research, then IHEs, requests to
one funding agency will be contingent on its grants from another, and there will inevitably be problems
as to who funds institutional overheads which are spread over both teaching and research. I should be
clear that reimbursement funding of inputs becomes very problematic in such a situation. Hence the need
for quite fundamental reforms, both in terms of system funding, and in terms of internal management[12].

2.14 The transition economies of Central and Eastern Europe are faced with simultaneous reforms of
academic programs and of financial procedures. It would seem that in terms of higher education financial
reforms their problems are somewhat similar in kind but much greater in degree than for many Western
European countries. Centrally planned economies had higher education systems in which teaching and
research had been institutionally separated, and in which enrollments had been relatively low[13], with
a relatively underdeveloped non-university sector. Following the usual procedures associated with
central planning, individual IHEs operated according to very detailed administrative and financial
directives from the center. Input based budgeting was the general rule, with funds being earmarked for
specific purposes, and with input prices being determined also by central planners. The task of reform
is much more difficult than in the West for two reasons: (a) the relevant administrative, managerial and
financial skills are not readily available from domestic sources and (b) serious general economic
dislocation has lead to an acute shortage of resources, which may have concentrated attention on survival
rather than reform.

2.15 It can be seen therefore that existing or "traditional" systems of funding for higher education have
evolved to meet the requirements of relatively small and static higher education systems. Recent
developments are changing the nature of higher education systems everywhere, and financial reforms are
necessary to cope with these changes. Not only are traditional systems of finance sub-optimal in terms
of economic activity, they are also becoming increasingly cumbersome and impractical when they have
to cope with situations for which they were not designed. In the transition economies of Central and
Eastern Europe, there is also an acute need to replace a very inflexible system of higher education
governance and finance, which in terms of finance has resembled a very centralized and inflexible version
of input-based, reimbursement, and heavily earmarked funding.


3.1 Some European National systems of higher education finance have been subject to radical reforms
during the past decade, and others have has significant reforms grafted on to existing structures. This
section of the paper will identify the essential features of reformed and emerging financial structures
under four main headings: (i) Funding Councils, (ii) Funding formulas for teaching and research, (iii)
The complementary role of Government grants and IHEs' self-generated income, and (iv) Internal
Management structures.

3.2 Funding Councils. "Buffer" institutions which stand between individual IHEs and Ministries of
education have been a common development. However the role and constitution of such institutions
varies considerably. Considerations of university autonomy have been important: buffer institutions have
been set up as a means of insulating IHEs from undue political interference. Also, especially in recent
years, the large number of individual IHEs and their increasing complexity has provided a rationale for
a specialist administrative and financial structure. Some type of buffer institution are involved in matters of academic planning with little or no direct operational funding role (for example the Council of Universities (Consejo de Universidades) in Spain). Others may combine a degree of planning and control (especially for capital developments and policies on size of enrolment) with allocation of funds (for example the Higher Education Authority in Ireland and the former University Grants Committee in the U.K.). Other bodies are more closely confined to the funding role, such as the U.K. University and Polytechnic funding councils, which have recently been merged to form the Higher Education Funding Council. These more recent variants of buffer institution have often to cope with large numbers of individual IHEs, which has lead to a changed role. Greater reliance has to be placed on Normative-based formula funding when the number if funded institutions increases, and the scope for direct administrative controls decreases as the system becomes too complex. Funding Councils may in some cases have an advisory role, with final decisions being taken by a Ministry (as in the proposed Romanian higher education funding council)[14]. What seems to be the case is that Funding Councils are never simply a mechanism for the allocation of a Government grant between institutions, even where a formula funding is used. If Funding Councils are to secure an adequate grant to distribute, they will have to have information from institutions about likely enrolment changes, and more generally about factors which are likely to change costs. This involves a planning and co-ordination role of some sort, which falls short of detailed centralized control.

3.3 Funding Councils are generally established by law, as is the number, composition and method of appointment of council members. There have been concerns on the one hand to avoid "regulatory capture"[15] and on the other to incorporate expertise from IHEs into the funding and planning process. There has also been a general concern to involve individuals from broader cultural and industrial aspect of life in the higher education policy and planning process. For these reasons Funding Councils generally (a) are appointed by the relevant Ministry[16], (b) have a certain quota of University or IHE personnel[17], and (c) have limitations on re-appointment to multiple terms of office.

3.4 Funding Councils require executive and administrative personnel with very specialized knowledge and experience. Sometimes personnel are transferred from the higher education finance section of the Ministry of Education (or possibly the Budget/Finance Ministry). This course of action may be inevitable. It has certain advantages: the credibility of a funding council need to be established in the relevant Ministries, and experienced inside personnel may help this process. There are also disadvantages: financial reforms may require fundamental changes of administrative culture, and transfer of personnel may serve to perpetuate old ways of thinking and acting[18]. For this reason it is important that two conditions are met: (a) Council members must be clearly be in control of policy formation[19], and therefore must have among its members people with the relevant professional expertise, (b) staff retraining should be an important initial priority of the Council.

3.5 It can be seen therefore that Funding Councils (and "buffer" institutions in general) have to establish their independence and their credibility (in both the technical and policy spheres). Their powers will always be limited by virtue of the fact that they are totally dependent on Government for finance: if they are seen by individual IHEs to be another arm of the Government administration, then they will have failed in a significant way. If they are seen by Ministries of Finance and Education as nothing more than the collective voice of IHEs then they will also have failed, and in the longer term their ability to argue the case for adequate finance will be compromised.
3.6. Funding Formulas. The detailed specification of a funding formula will not be discussed here: the emphasis will be on the constraints on the choice of formula, and on implementation aspects of whatever formula is chosen. Funding formulas are not necessarily implemented via funding councils: some higher education systems[20] which have been the subject of radical reforms have formula funding applied directly via the Ministry of Education.

3.7 Formula-based[21] funding is applicable mainly to teaching activities: research is less-susceptible to formula funding by its nature, and research funding councils have as their focus of operation the identification of research priorities and the implementation of appropriate evaluation procedures for research proposals. Formula funding has advantages of (a) transparency and therefore a more open and competitive process of allocation of funds between institutions, (b) efficiency in the sense that reimbursement of budgetary requests leads to inflated budgetary claims and consequent negotiations, and (c) feasibility in that large numbers of IHEs may require a very large administrative bureaucracy if all their individual budget submissions are to be evaluated in detail. Formula funding also has problems: for example some financial circumstances are unique, and cannot be catered for by a formula. In choosing and implementing a formula-based system, the main potential advantages of transparency, efficiency and simplicity should not be lost sight of; neither should the potential problems.

3.8. In very general terms, teaching costs account for between 60% and 80% of most IHE recurrent costs, and it is this element which is usually the basis for formula funding. In addition it is necessary to distinguish between core funding via a formula, and supplementary funding. The requirement for supplementary funding arises from (a) the fact that some IHEs may have unique financial circumstances, and (b) the need to have a mechanism to steer IHEs toward specific development goals.

3.9 Unit costs are essential to formula funding, and some initial attempt at unit-cost estimation is necessary if a funding council is to operate on a general normative basis. It may be the case that more refined unit cost statistics will take considerable time to produce, and so full implementation of unit-cost based formula funding may be a matter of refining initially relatively crude procedures over a number of years. One of the essential first tasks of any Funding Council is to begin the construction of a database which will enable unit cost and other normative indicators to be produced, and also to ensure that the appropriate information and accounting systems are in place in individual IHEs to facilitate the compilation of this data. IHEs may be reluctant to provide the appropriate information to a funding council, so it is important that they realize that (a) the information need not compromise their autonomy, and (b) that the information is of value for internal administrative purposes also: an IHE needs to know its own cost structure if it is to make rational decisions about anything which has significant resource implications. A general indication of the type of information required is given in Appendix A.

3.10 The exact type of unit cost information used by funding councils will depend on the organizational structures of, and on the degree of budgetary devolution within IHEs. In some University systems (for example the U.K. system prior to the 1980s), institutions are divided into faculties which cover very broad fields of study (Arts, Science, Engineering Medicine), and faculties are divided into departments which are largely discipline-based (History, Chemistry, Electronic Engineering, Pathology). In some faculties degree programs will involve inputs from virtually all departments (for example in Medicine); in other cases degree programs will involve the activities of a small subset of departments, or even of only one department (as in Arts). Information of unit costs by department is important, especially where the Arts model prevails; in cases such as Medicine, where all departments have a more or less fixed role,
then departmental unit costs are more a matter for internal IHE administration rather than for a funding council.

3.11 Other university systems may have a different organizational basis in two respects: (a) unit-credit systems, where student choice may play a greater role in determining degree structures and costs (as in the USA); (b) academic units (whether termed "faculties", "schools" or "departments")[22] may be intermediate in size, possibly with only one layer of organization, and may have a relatively high correspondence with degree programs. In this case the unit cost information and budgetary sub-unit is the "faculty" or "school", or whatever. Given the diversity of institutional structures it would seem that the following need to be taken into account when deciding on the degree of budgetary devolution and unit-cost reporting:

(a) Size of units: some academic units may be too small to cope with the administrative tasks of costing and budgeting, and the number of such units may generate an unmanageable amount of information.

(b) Function of units: Some units (e.g. the traditional broad-based Faculty) may be more academic rather than operational in nature. If the real resource deployment decisions are taken at a lower level, then Faculty budgets and costs are simply a reflection of those decisions.

(c) Homogeneity of units: some broadly-based Faculties may be composed of departments with widely differing cost structures, and it may be useful to have information on groups of departments: for example foreign language teaching may be relatively labor intensive and high cost compared with History or Economics; other subjects may be more equipment-intensive in their requirements.

(d) Correspondence with programs: most unit-cost information is input-related, but ideally one would like to have output-related cost information. This can be very difficult to estimate where there is a lot of flexibility of subject choice within an institution. Where a Department or Faculty has a relatively close relation to an individual degree program (or is a dominant contributor to a program), then it is particularly important that it forms a budget and unit-cost reporting unit.

3.12 Allocation of costs to academic programs involves not only departments and faculties, but also the central services on an IHE. Cost information is required on Academic Services (Library, Computing Services), General Services (Administration, Buildings, etc.), and Student Services (catering, residences, sport). Allocation methods need to be agreed and understood when assign central or common costs to students or programs. More important, it is necessary that a clear understanding be established regarding the behavior of central costs as student numbers change. Some costs may be fixed, (for example central administration), and others relatively variable (for example library services). In some cases large elements of central services costs may be fixed in the short-term, especially when enrolment changes are small. The behavior of central services costs in various circumstances will influence the estimates of Marginal Cost per student, which funding councils may wish to use. Marginal costs may differ significantly from average costs in some cases, and a good information system together with a well-developed unit-costing methodology should be capable of identify such differences.
3.13 Unit-cost funding formulas are usually based on enrollments, i.e. on what is essentially a measure of input. Ideally a more sophisticated output-based formula should be used, but as we have seen, this may be difficult to implement. The problem is therefore how to modify an input-based formula so that incentives for IHEs to perform more efficiently[23] are enhanced. Measures of output are difficult to interpret, and there is a danger of perverse incentives. For example if it is decided to reward throughput efficiency or low wastage, then an IHE might be tempted to lower failure rates by lowering standards, so independent monitoring of these standards then becomes a necessity. Similarly if quality of output is measured by degree grade, then rewards to IHEs for high "quality" may tempt them to indulge in grade-inflation, one again necessitating independent quality checks[24].

3.14 Interaction between sources of income. An important feature of traditional reimbursement funding is the "residual funding" problem, whereby the more income an IHE generated, the less budgetary support it got from Government, thereby blunting, if not destroying, the incentive to generate revenues in the first place. Formula funding does not eliminate the problem: if an IHE has a total income generated via a formula, it is possible that a funding agency will subtract estimated income from the total before finalizing the size of the block grant. Therefore a funding formula will also have to include a procedure for dealing with self-generated income in an incentive-compatible way.

3.15 The solution will depend to some extent on the magnitude and status of other sources of income. Consider the following four possibilities, which are in ascending order of complexity:

(a) Income is predominantly form Funding Council, with a small proportion (say 5% to 10%) coming from miscellaneous charges for use of IHE assets and research contracts, and no significant student fee income.

(b) Income from Funding Council, but with significant student fee income (say 20% to 30% of total) and some other minor income as in (i).

(c) Income from Funding Council for Teaching (say about 70%); Funding Council for Research (say about 25%) and minor self-generated income (about 5%).

(d) Income from Funding Council for Teaching (50%), Research Funding Council (20%), Student Fees (20%), and other income (10%).

The percentages are purely for purposes of general illustration, and their exact magnitude is not important: the possible interactions which may happen in each situation are the main purpose of the examples.

3.16 Case (i): Funding Council with small (5%) other income. Apart from deducting the income from any final (residual) grant, there are two main options.

(a) Set a general target of say 5% for IHEs to generate and allocate grants which cover 95% of costs via a unit-cost formula. Then IHEs which exceed the 5% target may keep the excess to finance whatever projects they wish, and IHEs which under perform remain short of funds and will have every incentive to improve.
(b) Simply ignore the self-generated income, because of its small size, and allow IHEs to spend it on improvements to equipment and buildings as they wish.

Choice of (a) or (b) will probably be influenced by the magnitude of own income: if it is 10% of total it is too large to ignore, so option (a) is appropriate, if it is 2%, then (b) might be preferred.

3.17 Case (ii): Funding Council with significant tuition fee income. We will assume that the IHEs are not free to charge whatever they wish and that the Government approves a schedule of student tuition fees, which is estimated to yield a significant revenue (say 30% of total income and/or expenditure).

(a) In some cases this can be virtually reduced to Case (i). For example if fees are set such that they are proportional to estimated costs, then each institution can be assumed to generate 30% of its required income from fees. The formula grant can be based on the remaining 70%, and any other minor income item can be dealt with as in (i) (a) or (b).

(b) If fees are equal for all courses[25], then IHEs will generate fee income which is a higher proportion of costs for "low-cost" courses (typically humanities, law, business studies) and IHEs with large medical, engineering, and science ("high cost") faculties will generate relatively low proportions of income from tuition fees. In this case the funding formula needs to be based on the mixture of courses, with the result that high-cost IHEs receive an appropriately higher grant. The important point is that "high cost" does not mean inefficient, but refers to the structure of courses on offer: any given course will attract the same grant (and fee) per student at all IHEs. Any small other income items can be dealt with as indicated already.

3.18 Case (iii): Separate funding for teaching and research. The main complication introduced by multiple sources of funding is the allocation of joint and overhead costs. For this reason, the rules used by General (Teaching) Funding Councils and Research Funding Councils must be consistent. Proper allocation of joint and overhead costs requires much more sophisticated internal information and management systems within IHEs than is required in cases (i) and (ii). One funding source (in practice the General or Teaching Funding Council) must be designated as the primary source of funds, with responsibility for the overhead or central services costs of IHEs. Research Council funding should be related to those costs which are specific to research, i.e. avoidable costs. This does not preclude a contribution to central services costs from research project finance, when these are affected by research activities. The most intractable problem is, however, where certain activities have joint research and teaching outputs and inputs. For example on the input side, post graduate programs (Ph.D especially) may involve the use of postgraduate students as Teaching Assistants or Tutors, as well as involving them in research assistance to senior staff or having them do research projects of their own. On the output side, the results are clearly both teaching and research. The funding of certain types of research, in particular long-term basic research which is closely related to the educational process, and to the careers of academic staff, would seem to be inseparable form the funding of teaching, and unit cost norms, especially for postgraduate students, generally reflect this. Research funding councils therefore have a limited though important role. Having identified research programs which meet their funding criteria[26] research funding councils and recipients in IHEs need to identify avoidable[27] research costs: personnel, materials and equipment specific to the project, the cost of diverting academic staff from teaching or other activities (where appropriate), the estimated impact on central services costs of the IHE.
3.19 Case (iv): Complex funding; Teaching, Research, Fees. In this case the information on research and teaching costs generated by the separate funding of some research programs may provide better estimates of teaching costs, and therefore may provide a basis for cost-related tuition fees. The funding of postgraduate research students may be easier to administer if their costs are known: with cost-related postgraduate fees the role of research councils or other bodies in promoting research by granting tuition scholarships to postgraduate students can be given a clear basis. As in case (iii) identification of which items are in principle to funded by which agency is necessary, and the comments made earlier about the need to avoid "residual funding" (or displacement effects) traps also apply. In a more complex scheme of funding the residual problem can apply at several levels: higher tuition income can lead to cutbacks in general government grants; this may lead IHEs to attempt to recoup more funds from research grants via higher overhead charges, leaving less finance for the actual projects themselves. A transparent accounting and administrative system whose workings can be widely understood is the best defence against such displacement effects.

3.20 Internal Administrative and Management Structures. The more autonomy an IHE has, the more important is the ability, efficiency and expertise of its administration. One can make a distinction between academic and financial autonomy: the former is generally regarded as an essential aspect of IHEs and the latter is increasingly regarded as necessary given the increasing size and complexity of higher education systems. Academic autonomy is in part secured by having administrative structures which places academics in positions of executive responsibility, (as rectors, or university presidents, or vice-chancellors, as deans, etc) and by academic staff representation on faculty boards, university senates etc. However even minimal financial autonomy requires professional administrators who manage the routine financial operations on an IHE. Generally these administrators have an executive function: they implement policies which are decided by academic bodies or by external entities, such as the Ministry of Education. There is invariably some tension between academics who hold positions of executive or managerial authority, and professional administrators, who often have what appear to be very similar powers. In financial systems which are decentralized, and in which the budgetary powers of IHEs are enhanced, these internal management and administrative problems can assume great significance.

3.21 Central to the operations of a financially autonomous IHE is a University Finance Department (UFD) which has (a) appropriately defined powers and functions, (b) personnel with appropriate skills and with suitable equipment. In addition, budgetary devolution within an IHE will require definition of the powers and functions of budgetary units (faculties, departments, etc) in relation to the UFD, and also appropriate skills. This raises another important question: the optimum degree of budgetary devolution within an institution. Finally, while a UFD has responsibility for financial management, with a strong emphasis on the immediate, short term, there is also a need to provide a longer-term perspective for IHE operations. Therefore a Planning and Development Office is required to support the IHE in articulating its broader and longer-term objectives, and to provide the framework within which the UFD can draw up budgets.

3.22 The precise relations between these executive offices and the governing structures of an IHE are difficult to specify, but senior officers of the university such as a deputy rector or vice-president are often given responsibility for financial and developmental matters. Thus the Vice-President (Finance), would be a senior academic, appointed by the University Senate (or elected), who would work with the University Finance Officer, who would be a professional with the appropriate financial and accounting skills. The distinction between matters of policy (which are the responsibility of the Vice President, reporting to the President or Rector) and matters of implementation (which are the responsibility of the
Finance Officer) is an important one, which however may not always be easy to observe with total consistency.

3.23 Powers and Functions of a University Finance Department. The UFD has responsibility for drawing up draft University budgets, and for overseeing the implementation of agreed budgets. As part of this, the UFD monitors the expenditure of Budgetary units within the University, and ensures that agreed budgets are not exceeded. In practice, the UFD will have delegated authority to negotiate annual budgets with these units as part of its responsibility for overall budgeting. As university budgetary units are in many cases responsible for the implementation of academic programs, the internal budgetary process should yield information on unit costs, and on how these costs change in response to changes in enrollments. While budgetary units such as departments may negotiate with outside bodies, such as research councils, for funds, it is essential that the UFD has information about these arrangements, because research contracts may have financial impacts beyond the departments which negotiated them. Thus, it will be necessary to establish rules which make appropriate provision for overhead costs as part of submissions for research funding. Good management information systems should be capable of yielding information which enables reasonably accurate estimates for overhead charges, which otherwise may be highly arbitrary. The UFD will also have a central role in relation to University Funding Councils, as it the main source of information on unit costs which are central to normative funding arrangements. While in a formal sense, the University Funding Council may agree a budget with the University Rector or Senate, the detailed monitoring of expenditure and income will be done through the UFD. However the UFD is responsible to the appropriate University officer, not to an outside body such as a Ministry or Funding Council.

3.24 Resources and Skills for University Finance Departments. The obvious accounting skills (financial, managerial and cost accounting) are required in a UFD, as well as access to the appropriate technology and skills in designing, implementing and maintaining a management information system. The level of skills should be such that the UFD is capable of responding to changing circumstances. Therefore it is not enough to have outside consultants design systems for a UFD, and give existing administrators just sufficient training to run them. Coping with a changing financial and administrative environment requires higher orders of technical and administrative expertise, and Universities with a high degree of financial independence will need to recruit experienced administrative personnel from outside. This may pose a problem in some cases, for example where public sector salaries are uncompetitive and where the relevant skills are very scarce, as in some transition economies. Where highly skilled professionals are engaged in University administration, their role as executors of academic policies may require extra emphasis: therefore financial skills training for senior academics who have the main policy responsibilities may be necessary.

IV: Implementation and Timing.

4.1 In a general paper such as this, it is difficult to specify very detailed implementation schedules and procedures for new systems of University Finance. Different countries will start from widely different circumstances, and will want to implement changes which may be more or less radical. Also, it appears that one seldom if ever replaces an old system with a new one in a static sense. As we have emphasized at the beginning of this paper, University Systems are subject to change and evolution, and whatever about old systems, new ones ought to be capable of coping with changing circumstances.
4.2 New systems of finance may not work according to the expectations of those who design them. This is partly because each system is to some extent unique, and therefore to that extent unpredictable in its behavior. It is also due to an important feature of all social systems: those who operate within them can alter their behavior in response to a changing policy environment. Therefore when new rules are introduced for the financing of universities, people in the system will modify their behavior. This may be the reason for changing the rules in the first place, but it may also produce unexpected and unintended effects.

4.3 There is an analogy with the policy debate about economic restructuring in transition economies: is it appropriate or feasible to adopt a "big bang" as opposed to a more gradualist approach? More specifically, should enterprises be privatized quickly, or should there be a prior process of restructuring before they are subjected to the full rigors of the marketplace? In the context of university financing, the analogy applies in the sense that even where no radical reforms of the system of finance are planned, there may still be a need for implementing a program of administrative and managerial staff development within IHEs and even within ministries of education. This could be viewed as a necessary precursor to later more radical changes in the system of finance. A "big bang" approach, which sets up new funding councils, new schemes of formula funding, new responsibilities which are part of financial autonomy, may require levels of managerial skill and experience which do not exist, and which cannot easily be obtained by hiring because of economy-wide shortages of these skills. On the other hand, the problem with a gradualist approach may be that traditional financial and managerial systems are inadequate to cope with urgent problems, and that very piecemeal and gradual reforms cannot be sustained with sufficient strategic purpose for a long enough period to have the desired results.

4.4 Whatever strategy is adopted, it would seem to be very important that a significant provision be made for staff training and development. This should encompass (i) academics who may hold positions of administrative responsibility in IHEs, (ii) civil servants in Ministries of Finance and Education who have responsibility for IHE funding (directly or indirectly), (iii) staff of funding and research councils, whether these are newly recruits or transferred from ministries, and (iv) administrative staff within IHEs. In addition there will probably have to be an infusion of new skills in the information technology and accounting areas to supplement existing or transferred personnel.
Appendix A.

Formula Funding Information Requirements.

The data required falls under three headings:

(i) student enrolment

(ii) financial

(iii) institutional.

Student Enrolment. In general terms one requires annual enrolment (student stock), as well as information on the flow through the system (annual intake and output or graduates). In addition the stock of students should be disaggregated by year of study (1st, 2nd,..., Final, etc). This information should be disaggregated by Faculty (or by whatever type of degree course-type seems most appropriate as the basis for a cost center). Student data should distinguish between full-time undergraduates, full-time post-graduates, and all part-time students. In the case of part-timers, it is necessary to have some indication as to whether they were equivalent to 0.5 or 0.3 or whatever proportion of a full-timer in terms of teaching hours. The objective of this is to enable us to construct some indicators of "full-time-equivalents" (FTE) which are necessary in unit cost exercises.

Financial. (a) Income: Principal sources (and amounts) of Current and Capital Funding: Tuition Fees, Government, other income, etc.

(b) Expenditure: Total recurrent expenditure by institutions, classified as follows: Academic Departments, Academic Support Services, Administration, Maintenance of Buildings, Student Support Services. Each of these should be separated into salary and non-salary components. In addition, Academic Services should be disaggregated into appropriate categories, such as Library Services, Computer Services, etc. In the case of Academic Departments, separate salary costs should, if possible, be available for Academic and Support staff, and expenditures should be disaggregated by individual Department, of if this is not possible by Groups of Departments, if these correspond to major contributors to degree programs. Finally, Capital expenditures by type: buildings, equipment, etc. I suspect that we will also need to look at the backlog of maintenance and equipment expenditures which have accumulated during the recent financially troubled times.

Institutional. (Some of this will be descriptive/qualitative rather than statistical). Staff numbers by academic department, and other areas: Library, Computers, Administration, etc. Separate data for full-time and part-time staff. FTE student-staff ratios by Department. Teaching hours per week and per year per staff member. Organization of academic year: number of weeks teaching, examining, etc. List of degree programs: length of courses. Information on service teaching where possible: i.e. staff from one Department giving classes for other programs. Rates of pay for various staff grades; also some comparisons with rates of pay generally in the economy and particularly in competing occupations. Procedures for determination of budgets by Department or Division and how this relates to the overall institution’s budget. Procedures for allocation of funds when they become available. Ability to run
deficits and surpluses. Ability to retain non-government sources of income, and whether this is offset by adjustments in government funding. Some overall information on accounting procedures and management information systems.

This sums to a very long list of data requirements, but in a well-run system the information should be reasonably easy to come by. The general purpose is to derive reliable cost per student estimates which may be used as follows:

(i) as a basis for formula funding.

(ii) as a basis for identifying areas where either more resources are necessary to achieve some minimum standard, or perhaps areas which are using too many resources.

(iii) as a basis for assessing cost-effectiveness of different degree programs.

(iv) as an aid to good management information and reasonably efficient control over budgets, avoiding unauthorized over-runs of expenditures.

A final problematic area is research and teaching; separating costs for these is a nightmare even in the best of circumstances (see para 2.6 and footnote 7 of the main text). In Eastern Europe, as in the former Soviet Union, research and teaching are separated institutionally to a greater degree than in the West, with research being linked to Academies of Sciences, and institutions under their control or influence. There is a trend in the West to separate research funding from teaching funding (to an extent); if this is the way of the future, then the East may be well-equipped to cope with it to the extent that the separate Academy structures are in place as funding bodies for research, whether or not this is carried on in Universities or specialist research institutes. However one should be careful to distinguish separate funding from separate research institutions: the latter pose many problems in terms of the best brains being outside the central teaching area of Universities, and the lack of appreciation of the significance of research activities may be an additional major disadvantage.

Notes

1. We use the term IHE as a generic term for all types of Higher education institution, whether University, Polytechnic, Teachers’ College, etc.

2. Basic research will always be the main focus of University research activity, but not the only one.

3. For example, a frequent problem is when extra funds generated by an IHE lead to an offsetting reduction in Government grants, thereby destroying the incentive to generate such funds in the first place. We will refer more extensively to this problem later.


5. For this reason it is not surprising that in the Netherlands, the basis for expenditure is a combination of input and output funding.
6. Kaiser et al use the terms "conditions under which allowances are provided" or "conditions of provision".

7. The lack of control of salary budgets and individual salary levels by individual IHEs may be linked to the virtual absence of tuition fees in the sense that both are linked to the idea of IHEs as "public service" institutions to which all citizens/taxpayers have access.

8. In some cases a Ph.D student may be assigned a weight of three or more FTEs.

9. There may be no method of separating all IHE costs into teaching and research costs, in that some costs will be genuinely common overheads to both kinds of activity. Rules-of-thumb such as pro-rata allocation of such costs are arbitrary to some extent. It would appear that there needs to be agreement at the highest (Ministry of Finance) level on the designation of one funding council as "basic" in the sense that it is responsible for such overheads. This is the situation in the United Kingdom, for example, where the Higher Education Funding Council is responsible for the overhead or infrastructural element of research, quite separately from research councils.

10. EC initiatives such as European Social Fund (ESF) programs for training have also been a significant source of IHE income, especially for short-cycle sub-degree courses, such as in Regional Technical Colleges (RTCs) in Ireland.

11. See para 2.4. above.

12. Internal management and financial reforms will be discussed later in this paper. They are required because IHEs are multiple output and multi-funded and administrators need to be able to assign costs to various activities. This imposes significant new demands in terms of information requirements and internal management and administrative skills.

13. This is especially true of the 1980s, when there was rapid enrolment expansion in Western Europe.

14. This illustrates the constants under which funding councils operate in virtually all cases: determination of the total government grant to higher education is a Government decision and a funding council can only make requests. Division of a budgetary allocation between institutions can be done by a council or by a Ministry on the recommendation of a council. If (as in the case of Romania), there are legal provisions for the councils' recommendations and Government dissent from them to be made public, then there may not be much difference in effect between formal decision-making versus recommendatory powers.

15. For example one of the reasons why the former University Grants Committee (UGC) in the U.K. was replaced by the University Funding Council (UFC) was that the UGC was perceived to be dominated by members from the Universities, whereas the UFC has a more substantial external (business and industrial) representation. The change seems to have been motivated by a desire to change the power base as much as by a formal re-definition of funding responsibilities.
16. In some cases the choice of individual members is completely at the discretion of a minister or ministry (e.g. Ireland, HEA), in other cases Universities may nominate members, from which the Ministry chooses a set number (e.g. the proposed Romanian funding council).

17. For example in Ireland, a minimum of seven of the eighteen HEA members must be academics, and minimum of seven must be from outside the university system.

18. This is a case of "regulatory capture" from above.

19. Even where (as in Romania) Funding Councils are advisory, one presumes that the advice they give is intended to be taken seriously: the professional credibility and independence of council members is still important.

20. For example, the Netherlands.

21. Or normative as opposed to reimbursement funding, to use the terminology of Kaiser et al, op. cit.

22. There appears to be no consistent or precise international usage of these terms, except that in most cases they refer to descending order of scope and size. In the UK there has been a tendency to consolidate operational units into large departments (Schools) within Faculties. In Romania, the Faculty is the main operational unit, and is somewhat similar to a large UK-type department (i.e. School).

23. Efficiency here means maximizing the outputs obtainable from a given set of inputs, or minimizing the inputs required to produce a given level of output.

24. The transition in the U.K. to a relatively competitive funding mechanism was accompanied by the institution of evaluation procedures for research and teaching. In the case of teaching it was felt that a more competitive environment might put pressures on IHEs which would lower quality, and that the feedback of information from graduates and from the labor market about low quality programs might be imperfect or unacceptably slow.

25. Or, more generally, if they are not the same fraction of costs for all courses. Whatever the details, the important point is that fee income will not be the same proportion of costs across all IHEs.

26. The processes by which research priorities are decided, and by which research funds are allocated are beyond the scope of this paper. Our focus is on the financial procedures and interaction with the funding of other aspects of IHE activity.

27. Avoidable costs are simply those which would not arise in the absence of the research in question. The concept is simply an expression of the opportunity cost principle.

28. "Cost related" does not necessarily mean full-cost, but includes some proportionality of tuition fees to costs.

29. See paragraph 3.10 above.