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Higher Education:
The Case for Selective Measures

John Sheehan

Policy Paper No. 25

October 1987

The Policy Paper series of the Centre for Economic Research consists of preliminary reports of policy-oriented research carried out by members or associates of the Department of Political Economy, University College Dublin. All opinions are those of the contributors and do not necessarily reflect those of members of the Department.
INTRODUCTION.

This paper addresses some problems which arise from the present policy of public spending cuts, using higher education as a case study(1). Its main purpose is to question the appropriateness of uniform reductions in spending across courses and institutions. Some of the conclusions may be relevant to other Government-funded programmes which are subject to similar budgetary control procedures. Its main focus is on the university sector. In a short paper such as this, other sectors such as RTCs, and related issues such as fee policies have had to be put aside.

Section I outlines the currently operative set of rules governing higher education spending and some of their direct implications. Section II looks at the cost of different degree programmes. Section III outlines some indicators of benefits from these programmes. Section IV offers some brief policy conclusions.

I: CURRENT POLICIES.

Since the 1987 Budget, and with the recent publication of the 1988 Book of Estimates, the Higher Education system is operating under the following guidelines for 1987 and 1988:

(i) Current pay expenditure (about 70% of all current costs) to be cut by 1% in 1987 and a further 5% (or slightly more) in 1988 relative to a 1986 base. This cut is in real terms, having allowed for officially sanctioned pay increases.

(ii) Non-pay current expenditure to be cut in real terms by about 5% in 1987 and again in 1988.

(iii) No trade-off allowed between savings in (i) and (ii).

(iv) Numbers employed to fall pari passu with (i).

(v) Institutions are not permitted to run deficits and overall current income and expenditure is to fall by the
amount implied by (i) and (ii), whether financed from fee or government income.

The following observations may be made about the immediate implications of these measures for the institutions concerned:

(a) It is implied (see (v)) that changes in fees which yield any additional revenue, over and above that which is budgeted for when grant allocations are being decided, will be 100% offset by reductions in Government grants, if not in the current year, then in 1989.

(b) No explicit guidelines are given on student numbers but it seems to be expected (or hoped) that the system will cope with at least existing total enrolments.

(c) Private funding and research grants can be offset against research or other special project expenses and to an extent be insulated from the claw-back of extra fee revenue implied in (a).

(d) The incentive and ability to re-allocate resources or rationalise programmes is minimal. It will be argued that there is an urgent need to change this situation.

II: COSTS OF DEGREE PROGRAMMES.

Universities have been estimating costs per fulltime-equivalent student (FTE) since 1981/2, and data for 1982/3 which were supplied to the Department of Education have been extensively if unofficially published. The National Planning Board's Proposals For Plan (1984) contained a series of unit cost estimates for the entire educational system. Barlow and McEvoy (1987) have used 1982/3 data to estimate cost functions for degree programmes. The numbers in this paper, based on 1982/3 data, are for average current costs per primary degree at 1986/7 prices. The averages of course costs in all institutions are reported, except for some programmes unique to particular colleges.(2)

Table 1 gives costs per primary degree; these show wider
variation than annual costs per enrolled student, because the expensive courses on an annual basis are usually of longer duration than the less expensive ones. Table 1 also shows the current government subsidy per degree (i.e. total current costs net of fees). This varies even more than gross cost because the variation in annual fee is seldom more than 50% as between the highest and the lowest.

The numbers in Table 1 do not reflect all the detailed changes in enrolment by Faculty which have occurred since 1982-83. As a result there is some overstatement of costs in those areas where enrolments have grown relatively fast, and a corresponding understatement in areas which have been restrictive in their admissions policies. If anything, this is a factor in understating the reported differences in degree costs. In any event even if the numbers are regarded as broadly illustrative of the major features of the cost structure of the system, this is sufficient for the arguments advanced in this paper.

Fees as a proportion of average current costs vary from 10% in Veterinary Medicine to 60% in Law(3). From the estimates reported by Barlow and McEvoy(4) it would appear that fees exceed marginal costs in most of the low cost (Arts, Business, Law, etc.) areas and are considerably less than marginal costs in Medical, Veterinary and Agricultural courses. Any restructuring of fees to bring them into closer alignment with course costs would obviously entail large changes in relative prices facing students. Fee policy, while closely related to the present paper is, however, a complex issue and will be left aside.

Capital costs are excluded from the above, and public sector accounting practice makes them difficult to estimate. Based on projects currently under construction (UCD Engineering School and UCD Library Phase II), and making certain assumptions about graduate output and overall requirements for new buildings, a reasonable figure for annual debt servicing costs on new buildings per degree is about £12,000 for Engineering and £3,000 for Arts/Business/Law.
Table 1.

Current Total Direct Cost and Government Subsidy per Degree (1986-87, £)

<table>
<thead>
<tr>
<th></th>
<th>(a) Total cost per degree</th>
<th>(b) Govt Subsidy per degree</th>
<th>(c) Fees as %</th>
<th>(d) Course length (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Lang/literature</td>
<td>10,400</td>
<td>7,600</td>
<td>27</td>
<td>3</td>
</tr>
<tr>
<td>2 Humanities</td>
<td>7,100</td>
<td>4,200</td>
<td>41</td>
<td>3</td>
</tr>
<tr>
<td>3 Econ/math, etc</td>
<td>5,400</td>
<td>2,500</td>
<td>54</td>
<td>3</td>
</tr>
<tr>
<td>4 Business/comm.</td>
<td>5,600</td>
<td>2,700</td>
<td>52</td>
<td>3</td>
</tr>
<tr>
<td>5 Law</td>
<td>4,800</td>
<td>1,900</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>6 Science</td>
<td>20,000</td>
<td>14,800</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>7 Engineering</td>
<td>15,900</td>
<td>10,800</td>
<td>32</td>
<td>4</td>
</tr>
<tr>
<td>8 Medicine</td>
<td>31,600</td>
<td>23,700</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td>9 Architecture</td>
<td>21,899</td>
<td>15,400</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>10 Vet.Med.(UCD)</td>
<td>71,700</td>
<td>64,500</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>11 Ag. Science(UCD)</td>
<td>28,900</td>
<td>23,700</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>12 Dairy Sc.(UCC)</td>
<td>25,700</td>
<td>20,600</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>13 Dentistry(UCC)</td>
<td>51,500</td>
<td>43,100</td>
<td>16</td>
<td>5</td>
</tr>
</tbody>
</table>

Note: Lines 1 to 5 are on the basis of a 3 year course, which is the case in 4 out of 5 colleges. For Science, 4 years is the norm for an Honours degree; some general degrees may be obtained in 3 years.

Research as opposed to teaching costs have not been separately identified. Research and teaching may be joint products to a considerable extent; also the high weight given to postgraduate students in calculating unit costs effectively assigns some research costs away from undergraduate courses.

Table 2.

Current Govt. Subsidy Per Degree: Variation Between Institutions.

1986-87 (£).

<table>
<thead>
<tr>
<th></th>
<th>UCD (3 years)</th>
<th>TCD (4 Years)</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Languages/Literature.</td>
<td>7,000</td>
<td>10,200</td>
<td>+46%</td>
</tr>
<tr>
<td>2 Humanities.</td>
<td>4,000</td>
<td>6,200</td>
<td>+55%</td>
</tr>
<tr>
<td>3 Comm./Business Studies</td>
<td>2,700</td>
<td>4,500</td>
<td>+67%</td>
</tr>
<tr>
<td>4 Law.</td>
<td>1,800</td>
<td>3,300</td>
<td>+83%</td>
</tr>
<tr>
<td>5 Commerce UCC</td>
<td>2,200</td>
<td>4,500</td>
<td>+105%</td>
</tr>
<tr>
<td>6 Commerce UCG</td>
<td>2,100</td>
<td>4,500</td>
<td>+114%</td>
</tr>
</tbody>
</table>
Costs also vary between institutions. Sometimes the subject content of similarly labelled degrees (for example Engineering in UCD and TCD) makes valid comparisons impossible. The most significant and policy-relevant variations are those where similar degrees are of different duration. Table 2 summarises government subsidy per degree in Languages, Humanities, Business Studies and Law (mainly) in UCD and TCD.

The very large cost variations in Table 2 are due to a combination of longer courses and higher annual unit costs. In Business Studies and Law, the latter factor is of equal or greater importance. There are, of course, other instances in which comparable programmes attract different levels of subsidy, and which would merit examination. Also, increased length of course is not inevitably a factor leading to increased costs, at least to institutions, although it is invariably costly to students.

III: BENEFITS OF DEGREE PROGRAMMES.

One would require data on employment and earnings of graduates over several years to estimate the effect on national product of various types of degree. In practice, such data are not available, and in their absence two approaches to social benefit assessment are frequently found:

(i) The simple assertion in many policy documents that the expansion of scientific and technological education is a necessary condition for economic development. Often, comparisons of Ireland's stock of scientific and technical manpower with the position in other countries is used as the main basis for such assertions.

(ii) Manpower studies for particular types of degree, which having identified a "shortage", proceed to recommend that output of the relevant type be expanded, implicitly at
Table 3.

Labour Market Performance of Primary Degree Holders; 1986 and 1987

(a) 1985 graduates in 1986 (all institutions).

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>% Emp in Irl.</td>
<td>59</td>
<td>78</td>
<td>68</td>
<td>49</td>
<td>84</td>
<td>23</td>
</tr>
<tr>
<td>% Emp Abroad</td>
<td>24</td>
<td>12</td>
<td>20</td>
<td>43</td>
<td>11</td>
<td>74</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>17</td>
<td>10</td>
<td>12</td>
<td>8</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

(b) 1986 graduates in 1987 (all institutions)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% Emp in Irl.</td>
<td>49</td>
<td>71</td>
<td>57</td>
<td>50</td>
<td>48</td>
<td>36</td>
</tr>
<tr>
<td>% Emp Abroad</td>
<td>34</td>
<td>21</td>
<td>29</td>
<td>43</td>
<td>14</td>
<td>62</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>17</td>
<td>8</td>
<td>14</td>
<td>8</td>
<td>38</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 4.

All Degree and Graduate Diploma Holders Entering Labour Market.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>% Employed in Ireland.</td>
<td>73.3</td>
<td>69.4</td>
</tr>
<tr>
<td>% Employed Abroad.</td>
<td>19.0</td>
<td>22.7</td>
</tr>
<tr>
<td>% Unemployed.</td>
<td>7.7</td>
<td>7.9</td>
</tr>
</tbody>
</table>

Table 5.

Current Subsidy Per Graduate Employed Domestically (1986-87).

(£).

1. Arts/Social Science. 9,500
2. Commerce/Business Studies. 3,800
3. Science. 26,000
4. Engineering. 21,600
5. Agriculture. 49,400
6. Architecture. 42,800
whatever cost is necessary.

Recent studies of the labour market performance of graduates throw some light on benefits, especially the annual First Destination surveys published by the HEA. These are based on University and College career officer returns, and are confined to the status of graduates approximately one year after graduation. Unfortunately there is very little information on graduate employment 5 or 10 years on. Tables 3 and 4 are intended to provide an approximate indication of effectiveness, which may be compared with the subsidies provided for various types of degree. While one would require earnings data to assess benefits properly, (i.e., in monetary terms which are comparable to costs) the graduate emigration rates do at least provide an indication of the divergence between private and social benefit.

Table 3 is based on the 1986 and 1987 First Destination reports. Medical and Legal graduates are omitted as the available information reflects immediate postgraduate professional training rather than proper labour market experience. The data refer to those primary degree graduates who enter the labour force within a year of graduation (about 53%). The remaining 47% are either in postgraduate diploma and degree courses, training programmes, or are not available for employment. Because of the different classification used, the unemployment rates in Table 3 appear higher than in the First Destination surveys. For this reason the summary indicators in Table 4 are provided (see below).

It is evident that emigration has increased significantly for Arts, Business Studies and Science between 1986 and 1987 and remains very high for Architecture and Engineering. Agriculture is a special case; the 1985/86 employment pattern was favourably distorted by hiring in the public sector to cope with the land tax and the 1986/87 numbers are more representative of recent years.

The level of graduate migration is hardly consistent with acute and generalised shortages in scientific areas. However the
reasons for graduate migration are varied. One can hypothesise that in present circumstances there is a surplus of civil engineers leading to emigration. Yet computer science and electronic engineering have high emigration which is arguably related to foreign demand and foreign tax regimes, rather than to lack of domestic job opportunities. Generally, the pattern of employment does not seem to justify diverting resources from Arts to Science and Engineering.

A further summary indicator of graduate performance is given in Table 4 by taking total degree-level flows on to the labour market in a given year, whether directly from primary degrees, (including B.Ed) or via postgraduate diplomas and degrees(6). The total number involved in 1986/87 was about 5,250.

The employment performance of those with degrees is generally, and not surprisingly, superior to those who leave school after 2nd level or with sub-degree awards. The benefits from the possession of different types of degree do not, however, seem at first sight to correspond to the very large cost differences evident in Table 1. One way of highlighting this is to calculate the Government subsidy per graduate employed domestically. This is shown in Table 5. It is obviously of limited value as an indicator as it ignores longer term employment patterns and return migration flows. It is perhaps in the same league as IDA cost per job (or job-approval) figures.

IV: SOME TENTATIVE CONCLUSIONS.

1. The available information for cost-benefit or other methods of evaluating various programmes within higher education is inadequate. The cost of rectifying this is trivial in relation to the level of spending on various programmes.

2. The conventional input-based budgeting system fails to generate the information needed for efficient resource allocation.

3. Such crude information as can be obtained indicates that the existing pattern of allocation is suboptimal, as between
degree subjects and institutions.

4. Imposing uniform expenditure cuts on all programmes in these circumstances can only be justified as a short-term expedient. As a longer term policy over 2 to 4 years it is inappropriate.

5. The view that we "need" a greater output of scientific and technical graduates merits very critical scrutiny (7).

6. In some high-cost areas where surplus output in relation to domestic demand can readily be identified (Medicine is the best example), it is inappropriate simply to cut back student intake, as has been done in the past. Cutting the number of subsidised places, whether by charging full-cost fees, amalgamation, rationalisation, or some other method, is warranted. Closure would be an option of last resort, if there is insufficient international demand.

7. In low-cost areas (Arts, Business, Law) fees are generally greater than long run marginal cost, (and even more so in the case of short run MC) and restriction of intake is unwarranted even on fairly narrow financial grounds.

8. Given the considerations in 7, and the current state of the labour market, the social opportunity cost of some lower-cost programmes may be such as to warrant expansion. This should be done only after careful examination of the merits of particular proposals, and in a manner which minimises the financial cost to the system as a whole. It is likely that a process of spreading extra numbers around institutions would be the best policy, because it would minimise adjustment costs, especially capital costs.

9. The overall reductions in resources in prospect for the system in 1988 are almost certain to require a selective approach, and cost-effectiveness of degree programmes will inevitably come under scrutiny. The alternative would be to allow much of the system to decline in quality to a significant and unacceptable extent.
FOOTNOTES.

(1) The original version of this paper was given at the
Dublin Economic Workshop Annual Policy Conference, Kenmare, Co.
Kerry, October 1987. I would like to thank Moore McDowell, Cormac
O Grada and Brendan Walsh for their helpful comments. The usual
disclaimer, of course, applies.

(2) These are mainly courses which (until 1987) have been
funded by the Dept of Agriculture, and for which broadly
comparable unit cost information has been available in the annual
Comprehensive Public Expenditure Programmes.

(3) As fees are now about 25% of current costs overall, the
percentages in table I may seem high. This can be accounted for
by generally lower fee/cost ratios in many postgraduate courses,
as well as some minor underestimate of undergraduate costs due to
failures and dropouts. Changes in the distribution of undergraduate enrolments between 1982 and 1986 may warrant some
revisions to the numbers in Table 1. The general structure of
course costs, and the conclusions drawn in this paper would not
be affected by any such revisions, in the author's opinion.

(4) Barlow and McEvoy estimate cost functions using cross-
section data on departments of varying size in comparable subject
areas. Assuming that enrolment changes have been fairly gradual
and that consequently departmental resources have time for
adjustment, their marginal cost estimates may be interpret as
long run.

(5) See, for example, NESC report no. 82 Manpower Policy in
Ireland Ch. 6.

(6) The coverage of Table 5 is incomplete in respect of
certain professional diplomas and other qualifications, for
example post-degree training in Medicine and Law, and
Professional Accounting diplomas. The domestic employment record
of graduates would probably be slightly better if information
were available on such courses.

(7) For an extreme and very recent expression of this view
see Innovation Policy Ireland, OECD, 1987, p.49: "We strongly
recommend that there should be an increase in the intake of
engineering and technology students by 25% per annum over the
next 5-10 years" (emphasis added).

REFERENCES.

(1) T Barlow and M McEvoy: University Departmental Costs,
paper read at the Irish Economic Association annual conference

(2) Comprehensive Public Expenditure Programmes, Govt Publications, annual.

(3) First Destinations of Award Recipients in Higher Education, HSA, annual.

