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ABSTRACT

This publication focuses on the part of OECD member countries' educational systems that is directly or indirectly financed by the government, examining educational expenditures in the context of conflicting claims of national resources. Chapter 1 surveys the rapid growth in expenditures through the 1960s and outlines some of the similarities in developments in a number of countries. Chapter 2 tries to assess to what extent increased expenditures were reflected in improved results. Chapter 3 projects the costs of the formal education system under a set of simplified assumptions on student enrollments and costs per student. Chapter 4 briefly describes several new programs that may require additional expenditures and provides rough estimates of their likely costs. Chapter 5 examines some economic policy issues arising from the analysis, with particular attention to alternative ways of financing higher education. The appendix discusses the statistical problems and methodology of the study, and presents tables that summarize selected educational expenditure data for Australia, Austria, Belgium, Canada, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and the United States. (Author/JG)

OECD

STUDIES IN RESOURCE ALLOCATION

No. 2

PUBLIC EXPENDITURE ON EDUCATION

JULY 1976

2

The Organisation for Economic Co-operation and Development (OECD) was set up under a Convention signed in Paris on 14th December, 1960, which provides that the OECD shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development;
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

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STATISTICAL ANNEX

PREFACE

The following report is part of a broader project on issues of resource allocation and government expenditure, launched by Working Party No. 2 of the Economic Policy Committee. The Working Party was originally formed in 1961 to deal with questions of economic growth and has published five reports on this subject. The latest one, *Expenditure Trends in OECD Countries. 1960-1980* (July 1972), marked an important stage in the Working Party's activities since it explicitly raised the issue of the appropriate allocation of resources to different public and private needs. It was recalled at the time that the growth of production of goods and services should not be seen as an end in itself, but that greater attention should be paid to how it can best be used to improve social and private wellbeing. Events since the early 1970s have, if anything, reinforced the need for work which concentrates on issues of resource allocation between different end-uses and analyses the welfare implications of varying expenditure patterns.

Reflecting the Working Party's new mandate and interest, a first Study in Resource Allocation, *Economic Implications of Pollution Control*, was published in February 1974. This contained an analysis of the resource cost and macro-economic significance of national programmes for expanding pollution control over the present decade. Since that date the Working Party has concentrated its attention on longer-run trends in the main items of government expenditure. The aim of its work in this field is to see what main factors were responsible for the rapid expansion of the public sector in most OECD economies over the last 10 to 15 years, to see what plausible hypotheses can be made about the future and to discuss some of the issues and options open to economic policy. To this effect, in addition to the present report on public expenditures on education, the Working Party has considered, or will consider, expenditures on income maintenance programmes, health, and, in lesser detail, housing and other infrastructure investment. The work is carried out using a cross-country comparative framework in the belief that countries can learn from the successes and problems of others.

When this series of studies has been completed, the Working Party will try to draw some more general conclusions on the whole field of public expenditures, by considering the alternative choices that may have to be faced and the financing problems that could arise. This work will also be integrated with the results of the Working Party's continuing analysis of the overall problems of economic growth and brought together with quantitative macro-economic projections to 1980/1985 on which work is currently underway.

INTRODUCTION

This report is largely concerned with that segment of Member countries' educational systems which is directly or indirectly financed by the government. The main reasons for the interest in educational expenditure and for the concern with its very rapid growth in the past decade and a half are evident and will only be briefly mentioned here. At a very broad level, the widespread influence which education has on a number of economic and social policy objectives has always stimulated interest in this area. This interest has been reinforced by the major organisational and structural changes which educational systems have undergone in the recent past. From a more economic standpoint, the growth of expenditures in this field has been extremely rapid and has been accompanied by a steady expansion in the number of new graduates.[1] Such developments, which were welcomed in the 1960s, have, more recently, been questioned. It has, for instance, been suggested that expansion went "too far", or "too fast". The wide disparities in the distribution of educational participation and achievement have led to additional criticism that spending on education has only benefitted a small and favoured segment of the population. Finally, since the vast majority of this expansion has been provided by the public sector, there has been growing concern over the taxes required to pay for rising expenditures.

It is clear that not all these aspects can be treated in the context of this report, especially since some of them raise political issues or require value judgements. In line with the mandate of Working Party No. 2, the following text will try and limit itself to examining education expenditure in the context of the conflicting claims which arise on national resources. Hence the study's focus is largely macro-economic. It does not aim at providing a detailed description of countries' educational structures,[2] nor at surveying the innumerable issues which have been discussed in the field of the economics of education. It restricts itself to an outline of past trends in a few broad categories of expenditure, to a very tentative assessment of

1. It may be interesting to note, however, that as a share of total non-defence public consumption, expenditure on education had already reached a relatively high level (above 25 per cent on average) in the early 1950s; since that date its share has risen only moderately.

2. A series of monographs on various countries' systems has been issued by the OECD's Directorate for Social Affairs, Manpower and Education (*Classification of Educational Systems*).

the results of such trends and to a discussion of alternatives for the future. In view of the large institutional differences among Member countries, such a discussion cannot aim at absolute precision. It is readily recognised that, in order to describe the major developments which have characterised the growth of expenditure in the OECD area as a whole, a number of simplifying assumptions had to be used while finer definitional distinctions were frequently glossed over. Such an approach clearly entails some losses in accuracy but should provide the macro-economist with a satisfactory picture of broad trends.

The paper deals almost exclusively with that part of total expenditure originating from the public sector. This is partly a function of data availability. Figures on private educational expenditures are very insufficient in a majority of cases. But even if more complete statistical information were available, government decisions effectively control the bulk of the education system and thus represent the most important area of concern.[1] It should be pointed out that data limitations are not restricted to this aspect but extend to most of the areas covered in this paper. There are numerous statistical difficulties which have to be met in any inter-country analysis of a field like education. The comparability of the figures is greatly impaired by the variety of educational systems, by the less-than-complete coverage of some of the data, by the different forms in which educational expenditure is financed, etc. Such shortcomings, which are discussed in greater detail in the annex to this study, must constantly be borne in mind when looking at the text.

Chapter 1 surveys the very rapid growth in expenditures through the 1960s and outlines some of the similarities in developments in a number of countries in the area. Chapter 2 tries to assess to what extent increasing inputs into education were reflected in improved results. Given the difficulties in defining and estimating the output of a service like education and the near absence of clear government statements on the objectives sought, the discussion is unable to reach any very firm conclusions. Chapters 3 and 4 look at the future of educational expenditures. Chapter 3 projects the costs of the formal education system under a set of simplified assumptions on student numbers and costs per student. Chapter 4 briefly describes several new programmes which may require further additions to expenditures and provides some very rough order of magnitude on their likely costs. Finally, some of the economic policy issues arising from the analysis are broached in the concluding chapter which looks, in particular, at possible savings and at alternative ways of financing higher education.

1. It is true that the private sector can provide educational services in the absence of government supply, but the importance of education has led governments in most countries to regulate its activities.

Chapter 1

THE GROWTH IN EDUCATIONAL EXPENDITURE

This chapter discusses the size and the development of public educational expenditure in a number of OECD countries for which data are available. It lays stress, in particular, on the growth of such expenditures over the last decade and on the rather different trends experienced by lower and higher levels of education. The statistical difficulties encountered in trying to provide a consistent and roughly comparable picture for as diverse a sample of countries as those covered here have already been briefly mentioned in the Introduction and will not be recapitulated here. But the tentative nature of many of the findings should always be borne in mind in what follows.

THE GENERAL PICTURE

Before proceeding to a detailed description of the elements underlying the rapid expansion of expenditure in Member countries, it may be necessary to provide some overall view of the educational system's importance. A first such indication is given by Table 1, which shows the percentage of the total population attending school or university in the early 1960s and in the early 1970s, as well as the 1970 proportion of teachers in the labour force. The numbers of students are subject to several statistical reservations (they exclude pre-primary forms of education, which are quite important in some instances, their coverage of part-time students varies across countries etc.), and so are those on teachers.[1] Very broadly, it would, nonetheless, seem that teaching as a profession typically attracts some 2 per cent of the labour force, while the student population accounts for some 20 per cent of the total population or about 2½ per cent more than a decade ago.

1. In particular, the data are weak because frequently there is no distinction between full-time and part-time teaching; teachers who teach at more than one school or level are often counted twice and, in some countries, teachers include personnel with mainly non-teaching activities. See OECD, *Educational Statistics Yearbook*, 1974, Vol. I, p. 41.

Table 1. RELATIVE SIZE OF STUDENT AND TEACHER POPULATIONS EARLY 1960s AND EARLY 1970s

Percentages

		Students[1] as per cent of total population		Teachers[2] as per cent of labour force
		Early 1960s	Early 1970s	1970
Australia	(1963 64-71 72)	19.9[3]	22.0[3]	3.5[4]
Austria	(1963-72)	15.8	19.7	2.3*
Belgium	(1963-72)	17.1	19.9	4.6 (5.1)
Canada	(1963 64-70 71)	25.4[3]	29.3[3]	3.7 (3.9)
Denmark	(1960-72)	15.6	21.9	3.1
Finland	(1963-73)	22.2[3]	23.5[3]	2.4 (2.4)
France	(1963-73)	18.6	20.5	2.5 (2.8)
Germany	(1963-71)	14.2[3]	17.4[3]	2.4[4,5]
Greece	(1960-70)	15.3	17.1	1.4* (1.5)*
Ireland	(1965-72)	19.3	21.9	2.9* (3.0)*
Italy	(1963-72)	14.4	16.3	3.1* (3.5)*
Japan	(FYs 1963-71)	24.5	20.2	2.1* (2.3)*
Netherlands	(1963-70)	20.2[3]	21.2[3]	2.5[4,6]
Norway	(1963-70)	18.3	19.4	2.8
Portugal	(1960-71)	12.8	17.2	1.7* (1.7)*
Spain[7]	(1960-70)	12.1	18.2	1.8* (2.0)*
Sweden	(1963-70)	16.2[3]	16.8[3]	2.1* (2.4)*
Switzerland	(1963-72)	14.9	16.7	..
Turkey[7]	(1960-70)	12.3	18.4	1.4*
United Kingdom[8]	(FYs 1963-71)	16.1[3]	18.8[3]	2.0
United States	(1963 64-72 73)	26.5	28.5	3.3
Dispersion[9]		4.1	3.4	0.8
Average[10]		17.3	20.0	2.5
Average EEC[10]		16.5	19 3	2.8

1. Full-time and part-time (excluding children in pre-primary schools).
2. Full time only. Figures in brackets include pre-primary teachers.
3. Full time equivalents.
4. 1972.
5. Figures include all university personnel.
6. Figures for higher education are based on Secretariat estimates.
7. Full time students only.
8. Excludes students in independent schools.
9. Measured by standard deviation.
10. Geometric mean.

* Denotes full and part-time.

Sources: OECD. *Educational Statistics Yearbook* and *Labour Force Statistics*; sources quoted in the Statistical Annex.

These data do not of course give an indication of the size of the public education sector, since students attending private schools and universities are also included, and provide no guide as to the macro-economic expenditure flows involved in education. The public sector's importance

in this field, expressed as a percentage of GDP, is shown in Table 2. It should be noted that if actual GDP figures are used as denominators for the overall share the results would not be free from cyclical variations. If is assumed that education expenditure is not affected by such fluctuations[1] the expenditure/GDP ratio at a point of time (and, even more, its trends through time) will be distorted by cyclical movements. Over the period here surveyed, cyclical fluctuations have been relatively small so that the use of actual GDP figures would create no major distortions. But the introduction of cyclically smoothed output data is more appropriate. Given the difficulties in determining the exact level of "potential" output, "average" output will be used in what follows to calculate the shares of educational expenditure in GDP.[2]

A number of caveats must be borne in mind when looking at this table. Firstly, the education expenditure figures are on a budgetary rather than on a national accounts basis and therefore not strictly comparable to GDP in conceptual terms.[3] Secondly, in some instances the data cover only expenditures incurred by education ministries, while in others they may also include education financed by other administrations (e.g. the costs of military academies borne by defence budgets, of pre-primary education incurred by welfare departments, of agricultural schools supported by agricultural ministries etc.). Thirdly, the dividing line between the private and the public sectors is often unclear. Thus, in several countries (e.g. Belgium, the Netherlands or the United Kingdom), there is a large private education system at the primary or secondary level which is wholly or partly subsidised by the State. At higher levels of education some private university systems also receive extensive government support. In addition, in a number of countries, large sums are paid in the form of maintenance fees which are not direct costs for providing a service but an indirect support to households or individuals. The general rule followed in this report has been to include under the public expenditure heading all the costs incurred by private institutions when these are entirely or very largely supported by the State. Otherwise, private education has not been incorporated, but an effort has been made to show, whenever data are available, the size of this sector, at least for those countries in which it looms large. Grants and scholarships have been included, whenever data were available.

As they stand, the figures show that public expenditure on education represents, on average, roughly 4¼ per cent of Member countries' GDP, against a 3 per cent share ten years earlier. It should be noted that this is not the total resource cost of education. Quite apart from the private

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1. An assumption which would seem broadly justified, at least for current expenditure.

2. The figures for "average" output are obtained by applying actual GDP deflators to the "average GDP" data in volume terms as calculated in "The Measurement of Domestic Cyclical Fluctuations", *OECD Economic Outlook-Occasional Studies*, July 1973.

3. Some countries provide data on a national accounts basis but this information is not broken down by levels of education and seldom supplies figures on capital costs; hence it could not be used for the present purpose.

Table 2. PUBLIC EXPENDITURE ON EDUCATION (EE)
EARLY 1960s AND EARLY 1970s

In per cent of "trend" GDP at current prices

		Early 1960s	Early 1970s	Implied elasticity of: Total EE with respect to GDP at current prices	Implied elasticity of: Per capita EE with respect to per capita income (at constant prices)
Australia	(1963 64-71 72)	3.0	4.5	1.50	1.23
Austria	(1963-72)	3.1	5.2	1.69	1.28
Belgium	(1963-72)	4.2	5.4	1.28	1.08
Canada	(1963 64-70 71)	4.6	7.7	1.68	1.43
Denmark	(1960-70)	4.0	7.0	1.73	1.32
Finland	(1963-70)	6.2	6.3	1.02	0.86
France[1]	(1963-73)	2.5	3.1	1.23	1.09
Germany	(1963-71)	3.0	4.2	1.40	1.13
Greece	(1960-70) ...	1.7	2.3	1.34	0.99
Ireland	(1960-70)	3.0	4.9	1.57	1.33
Italy	(1963-72)	3.2	4.0	1.31	1.09
Japan	(FYs1963-71)	3.8	3.6	0.99	0.75
Netherlands	(1960-70)	4.8	7.6	1.58	1.06
Norway	(1963-70)	5.1	6.0	1.17	1.13
Portugal	(1960-70)	1.9	1.9	1.08	1.08
Spain	(1960-70)	1.2	2.4	1.97	1.39
Sweden	(1963-70)	5.0	7.1	1.41	1.25
Switzerland	(1963-72)	3.3	4.9	1.46	1.32
Turkey	(1960-68)	2.3	3.5	1.50	1.41
United Kingdom	(FYs1963-71)	4.8	5.6	1.27	1.20
United States	(1963 64-72 73)	4.5	6.0	1.30	1.14
Dispersion[2]	.....	1.3	1.7	0.24	0.17
Average[3]	.....	3.3	4.6	1.38	1.16
Average FEC[3]	.....	3.7	5.1	1.39	1.14

1. Ministry of Education expenditures only; in 1973 total public expenditure is estimated at 4.5 per cent of GDP.
2. Measured by standard deviation.
3. Geometric mean.

Sources: OECD, *Educational Statistics Yearbook* and sources quoted in the Statistical Annex.

sector's share in total output, there are considerable indirect costs in the form of foregone earnings.[1] These will not be explicitly considered here since they do not seem to be very relevant to a study of past public expenditure trends. They need, however, to be borne in mind in any projection of future educational costs.

1. The importance of these indirect costs is indicated by the fact that approximately one third of students in full-time education in Member countries are of working age. For some countries very tentative estimates of the foregone earnings of university students are bigger than actual higher education budgets.

Fairly remarkable differences exist between countries in the GDP shares of public education. In recent years, these varied between lows of only to 2 to 2½ per cent in several of the Southern European countries and highs of 7 to 8 per cent in a number of Northern European countries and in Canada. In the latter country, educational expenditure, at close to 8 per cent of GDP, represented as much as one fifth of total government expenditure (including transfers and investment). To some extent, of course, these differences reflect the varying weights of the private and public sectors. In Portugal and Spain, for instance, two countries in which the government devoted less than 2½ per cent of GDP to education in 1970, private education remains important. For Spain, some expenditure data put the private sector's share in output at almost one per cent and the enrolment figures show that 30 per cent of students attended private institutions. Elsewhere, the private sector is unlikely to account for similarly large shares but, among the few other countries for which data are forthcoming, its weight is not insignificant in, for instance, France and Finland (15 per cent of the student population), the United States (12 per cent) and, especially, Japan (20 per cent), where some three-fourths of university students attend private institutions. The available evidence on the expenditure side is summarised in Table 3, which provides national accounts data on consumption flows only. In the sample of countries covered, the public sector accounts for some 90 per cent of the expenditure flows with Greece and North America at the low end of the spectrum while Belgium, the Netherlands and Sweden are close to 100 per cent ratios.

Through time, public expenditure on education in current prices has risen a good deal more rapidly than GDP. The implicit "expenditure" elasticity of this item in the area as a whole is of the order of 1.4, higher than that of most other major categories of public expenditure.[1] A large number of countries is clustered around this average, with perhaps a tendency for countries in which output grew most rapidly (Japan, Greece, Portugal, or Italy) to record relatively smaller elasticities. This could reflect the lower relative priority given to this field at somewhat earlier stages of development. Evidence supporting this supposition is provided by the presence of an, admittedly weak, relationship linking per capita income and education expenditure shares in GDP. Alternatively, it could be argued that the capacity such countries had to accommodate rising demands in this field implied that the share of resources devoted to education did not have to increase. But support for this hypothesis is less easily forthcoming and the example of Spain or, inversely, that of the United Kingdom, provide striking exceptions. Despite a 7½ per cent annual output growth, Spain recorded an elasticity of 2 – the largest in the sample. Two main factors probably influenced this development, a very low starting point (the lowest in the area), and, possibly, some switch from private to public forms of education. Otherwise, however, there would seem to be little evidence over

1. The per capita income elasticity (at constant prices) is of the order of 1.15, a result which is not very different from the one obtained with the cross-section data in U.S. dollars for the early 1960s and 1970s shown in the Chart.

this decade for "catching up", i.e. for a tendency for countries with relatively low shares at the outset to increase their shares faster than the average, and vice versa.

Table 3. SHARE OF PUBLIC SECTOR IN TOTAL CURRENT EXPENDITURE ON EDUCATION

Percentages

	Early 1960s[1]	Early 1970s[1]
Australia	81.5	86.5
Belgium	96.2	97.9
Canada	81.5	80.5
Finland	82.4	83.0
Greece	52.2	65.4
Italy	93.3	95.3
Japan	86.8	83.4
Netherlands	..	98.5
Norway	94.4	94.5
Sweden	99.9	99.9
United Kingdom[2]	(76.3)	(75.0)
United States	78.1	81.7

1 For exact years, see Table 2

2 The figures are derived from national accounts which treat certain educational institutinns (universities, direct-grant schools and colleges) not wholly publicly funded as being within the private sector even though most of their income originates in the public sector. This departure from the general rule means that the figures shown are lnwer than they would have been on a strictly cnmparable basis; institutions wholly or mainly publicly funded are estimated to account for 90-95 per cent of all United Kingdom educational expenditure

EXPENDITURES IN SELECTED COUNTRIES

The previous section has given a very brief overview of the size of expenditure in the area as a whole. Any more detailed analysis of the elements underlying inter-country differences in the proportion of output devoted to education requires a breakdown of this total expenditure for various educational levels. Unfortunately, consistent figures on expenditures for the different forms of education are not often available. Hence, the remainder of this report will deal with a smaller number of countries for which more complete data were assembled.

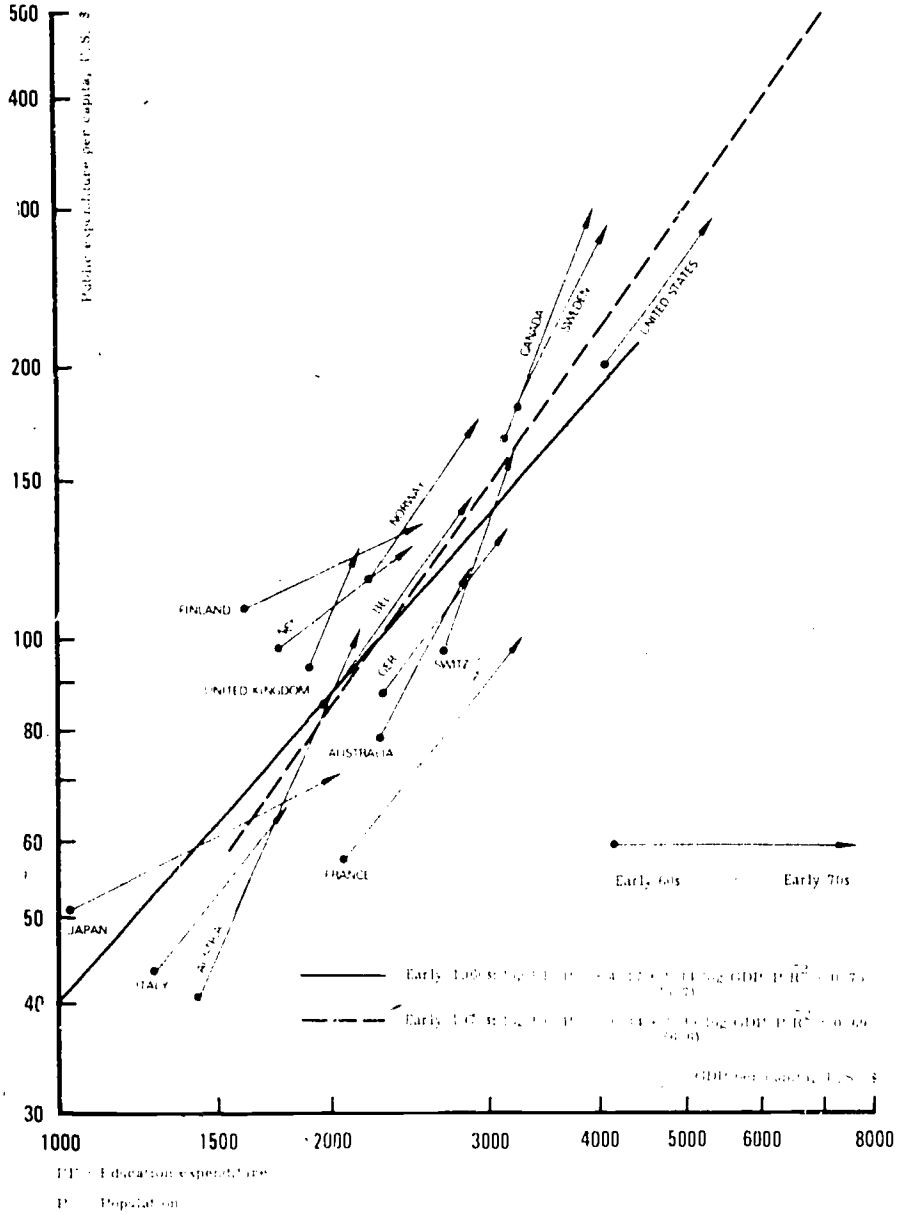
The statistical analysis will follow a method also used in the study on income maintenance programmes.[1] The approach is based on an identity in which the share of public expenditure on education in GDP is equal to the product of the following four variables:[2]

1. See OECD, *Public Expenditure on Income Maintenance Programmes*, 1976.

2. Symbolically, if EE = public education expenditures, GDP = gross domestic product, S = number of students, I = the size of the relevant population and N = total population, then EE/GDP = (EE/S) x (S/I) x (I/N) x (N/GDP).

PUBLIC EXPENDITURE ON EDUCATION PER CAPITA AND GDP PER CAPITA

Early 1960s and early 1970s, at 1970 prices ; log scale)



i) Costs per student;

ii) The number of students as a proportion of the relevant age group (for instance age 6 to 23);

iii) The relevant age group as a per cent of the total population;

iv) The reciprocal of GDP per head.

By multiplying items (i) and (iv) the cost per student can be expressed in relation to GDP per head. Hence the share of educational expenditure in output can be subdivided into three ratios, called for short the "demographic ratio", the "enrolment ratio" and the "cost ratio".

The "cost ratio" defined in the previous paragraph is statistically similar to the "transfer ratio" used in the report on income maintenance expenditure. Its economic implications are, however, somewhat different. Linking pension or unemployment benefits to GDP per capita has some immediate significance. It provides a way of assessing (subject to some important qualifications), the relative "generosity" of a transfer programme in terms of an average income concept. The same is not necessarily true for costs per student. The educational planner is probably more interested in knowing how high educational expenditure is at a moment of time in absolute terms, and how fast it has expanded in terms of percentage changes. But for the macro-economist interested in problems of overall resource allocation, a ratio which shows the cost of educating one student in terms of per capita output, may be an equally meaningful concept. It allows a number of comparisons across countries and through time and can show, for instance, whether and how such ratios evolve as countries get richer. Such an approach may, in addition, facilitate projections into the future, since it avoids the need to forecast absolute levels of GDP or expected rates of inflation.

It should, of course, be emphasized that the subdivision used here is merely a statistical description and that, therefore, the international parallels or differences which will be presented will inevitably be somewhat superficial. Moreover, value judgements should also be refrained from in view of the weakness of the underlying data. Even for the restricted sample of countries here covered, substantial statistical problems remain, notably in the coverage of part-time students and of private education facilities. Both of these have been excluded, but it is not certain that absolute inter-country consistency has been achieved. Despite such difficulties, it should be possible to gain a very rough impression of the relative importance of various factors, some of which might be considered as outside the control of governments (such as demographic structures), and some of which could be considered discretionary (such as enrolment ratios or costs per student).

Bearing these various reservations in mind, aggregate data for 15 countries covering current public educational expenditures are presented in Table 4, following the approach described above.[1] Inevitably, the figures

1. These figures differ from those shown in Table 2 because they exclude capital costs (which can vary quite erratically from one year to the next).

Table 4. PUBLIC CURRENT EXPENDITURE, EARLY 1970s
ALL EDUCATION LEVELS

	Per cent share in "trend" GDP	Contributing factors:		
		Demographic ratio[1]	Enrolment ratio	Cost ratio
Australia (1971-72)	3.77	0.312	0.601[2]	0.201
Austria (1972)	4.03	0.270	0.729	0.205
Belgium (1972)	4.90	0.252	0.789	0.246
Canada (1970-71)	6.46	0.358	0.818	0.221
	(7.23)			(0.247)
Finland (1973)	5.57	0.310	0.760	0.237
France (1973)	3.23	0.260	0.789	0.157
Germany (1971)	3.02	0.234	0.744	0.174
Italy (1972)	3.95[3]	0.260	0.629	0.243[3]
Japan (FY 1971)	2.56	0.259	0.643	0.154
	(3.04)		(0.780)	(0.150)
Netherlands (1970)	5.44	0.300	0.707	0.256
Norway (1970)	4.90	0.251	0.770	0.253
Sweden (1970)	5.90	0.222	0.756	0.352
Switzerland (1972)	3.56	0.260	0.643	0.213
United Kingdom (FY 1971)	4.44	0.259	0.726	0.236
United States (1972-73)	5.26	0.318	0.764	0.216
	(6.44)		(0.864)	(0.234)
Dispersion[4]	1.10	0.035	0.063	0.046
Average[5]	4.33	0.273	0.721	0.220
	(4.36)		(0.737)	(0.222)

1. For the coverage of the demographic ratio see notes to Tables 5 and 6.
2. 0.795 for Australia if the private sector is included.
3. Includes capital costs.
4. Measured by standard deviation.
5. Geometric mean.

Note: The first column equals the product of the next three columns multiplied by 100. Figures in brackets for Canada, Japan, and the United States cover total (public and private) current educational expenditures.

are approximate, influenced as they are by the proportion of students at various levels of education, the length of compulsory schooling or of degree courses, etc. Thus, the demographic ratios cannot be directly compared since they cover different segments of the young population, depending on the length of primary and secondary education. The comparability of enrolment ratios is also subject to a number of reservations, but very roughly such ratios seem to be around 70 to 75 per cent of the student age population, with relatively little inter-country variation, especially when account is taken of the private sector. North America is somewhat exceptional, with a well above-average proportion of the young attending schools and universities. The somewhat lower European ratios may reflect the tendency to be more selective in the choice of education after compulsory schooling has finished, with a greater emphasis on non-school forms of learning. More broadly, enrolment ratios may also be linked to incomes per capita and some evidence for a positive relationship is forthcoming from the figures.

More striking variations are to be found, of course, in the relative levels of costs per student. As already pointed out before, care must be taken in interpreting the data. Any statistical error in earlier columns is reflected in the "cost ratio" which is obtained as a residual. And, even if the "cost ratios" were free from measurement errors, they would still reflect a number of social and historical factors which cannot be compared internationally. The figures go from highs of roughly one third of GDP per capita in Sweden to lows of barely 15 per cent in France and Japan. Not too much stress should be laid on such differences. More interesting is perhaps the finding for the average of the relatively rich Member countries here considered. For this sample, the education of a student seemed to involve, in the early 1970s, a cost not far from ¼ of a per cent of per capita output with little dispersion around the mean.

The overall aggregates discussed so far are, however, very heterogeneous since they cover forms of education in which both enrolment and cost per student ratios can differ greatly. Hence the following will look at expenditures at a more disaggregated level, considering primary and secondary forms of education first and higher education later. The GDP shares which will be discussed will not necessarily add up to the totals shown in Table 4 because of the presence in some instances of miscellaneous items of spending which cannot be allocated to various levels. This is not a factor of major importance, however, and in most cases the discussion will cover the bulk of expenditures.

i) *Primary and Secondary Education*

The cost of primary and secondary public education represents over 3 per cent of GDP in the sample of countries here covered; is as high as 5 per cent in Canada and comes down to 2 or 2½ per cent in France, Germany and Japan. Demographic ratios vary widely. To some extent this reflects the different lengths of schooling,[1] but there are also significant variations in purely demographic factors. Thus, if the North American countries had the same demographic ratio as Germany, they would, *ceteris paribus*, devote 1 to 1½ per cent less of GDP to expenditure in this field. This is an extreme example, but even within the European context, both Finland and the Netherlands would spend ½ per cent of GDP less if the size of their young population was similar to that of Germany. Enrolment ratios, on the other hand, are relatively uniform across countries and go from 90 to 95 per cent of the relevant population (including private schools), with only Italy and Switzerland lagging behind largely on account of a somewhat shorter compulsory school period.

Perhaps the most striking finding is the relative uniformity of the cost ratios. Despite the wide variety of educational systems and approaches here covered, the varying weights of the public and private sectors, the differing

1. These have been allowed for in Table 5 by changing the size of the relevant age groups.

treatment of administrative expenditures, etc., a fairly large number of countries are clustered around a cost per student ratio of roughly 20 per cent of GDP per head. There are, of course, gaps between, for instance, the Scandinavian countries (whose high figures may, in part, reflect lower population densities in large parts of the country), and Australia, France, Germany or Japan. But, on the whole, these disparities would seem surprisingly small. Such a finding would tend to support the view that the level of educational expenditure per pupil is not necessarily an absolute but rather a relative concept which evolves in line with general economic developments. This conclusion is, however, based on a rather restricted sample of both countries and per capita incomes and does not take into account the possibility that some absolute limit to unit expenditures could eventually

Table 5. PUBLIC CURRENT EXPENDITURE, EARLY 1970s[1]
PRIMARY AND SECONDARY EDUCATION

	Per cent share in "trend" GDP	Contributing factors:		
		Demographic ratio[2]	Enrolment ratio	Cost ratio
Australia	2.62	0.243	0.709[3]	0.152
Austria	3.27	0.199	0.939	0.175
Belgium	4.20	0.192	0.969	0.226
Canada	5.03	0.288	0.931	0.187
	(5.29)			(0.197)
Finland	4.81	0.218	1.017	0.217
France	2.79	0.195	0.960	0.149
Germany	2.17	0.180	0.914	0.132
Italy	3.00[4]	0.202	0.753	0.198[4]
Japan	2.22	0.185	0.879	0.137
	(2.45)		(1.000)	(0.132)
Netherlands	3.84	0.231	0.851	0.195
Norway	3.85	0.190	0.952	0.213
Sweden	4.22	0.160	0.949	0.277
Switzerland	2.69	0.199	0.802	0.168
United Kingdom	2.86	0.202	0.886	0.160
United States	3.80	0.245	0.886	0.175
	(4.19)		(0.981)	(0.174)
Dispersion[5]	0.87	0.031	0.082	0.037
Average[6]	3.31	0.206	0.889	0.181
	(3.37)		(0.903)	(0.181)

1. For the precise year covered for each country, see Table 4.
2. The population covered differs slightly across countries, depending on the initial age of compulsory education and on the length of the secondary school system. Thus in one case the demographic ratio may cover all children aged 5 to 17 and in another those aged 7 to 18. For details see Annex.
3. 0.904 for Australia if the private sector is included.
4. Includes capital costs.
5. Measured by standard deviation.
6. Geometric mean.

Note: The first column equals the product of the next three columns multiplied by 100. Figures in brackets for Canada, Japan and the United States cover total (public and private) current educational expenditures.

be reached in very rich societies (or that some absolute minima exist in very poor ones).

ii) *Higher Education*

The picture for higher education is very different and little uniformity can be found among countries. The overall share of output devoted to this field is close to one per cent but the dispersion around the mean is much larger with ratios to GDP varying from 1½ per cent in North America and the Netherlands to less than ½ per cent in France and Italy. Demographic variations are not very important in explaining such differences, but enrolment ratios show wide disparities. Such ratios are not strictly comparable between countries, partly because the length of degree courses varies[1] and partly because of purely statistical quirks like double counting of students enrolled in more than one institution. As they stand, the figures go from peaks of 40 per cent in North America to lows of 10 to 15 per cent in Austria and Switzerland. The differences in higher education budgets as a share of GDP between these two sets of countries are more than accounted for by such disparities. Not surprisingly, variations in cost ratios are also large.[2] The greatest differences are within the European Community. On the one hand are the high cost British and German systems (but also Swiss), in which student numbers are low, and teacher/student ratios high. On the other hand are the French and Italian systems in which there is no limitation to the number of entrants who hold a secondary school leaving certificate, and whose teaching methods are less labour-intensive.

The different emphasis which countries place on higher relative to lower levels of education may be worth noting. Taking countries with roughly similar lengths of degree courses, Australia and the United States devote over 25 per cent of total current expenditure to higher education. At the other end of the spectrum are Finland and Italy, with figures of roughly 10 per cent. In terms of costs per student, the Scandinavian countries have tended to direct attention to lower levels of education relative to the other countries in the sample, while in Britain, Switzerland and possibly Germany (where the "cost ratio" figures are less reliable), the opposite seems to have been the case.

THE GROWTH OF CURRENT EXPENDITURES

In the previous section emphasis has been placed upon the relation between the size of education budgets and gross domestic product. While this gives a better chance to place the expenditure patterns and the different elements of cost in perspective across countries, it gives no indication as to

1. Unlike for primary and secondary education, Table 6 presents roughly comparable figures for demographic factors (i.e. a four year age span). Hence, if degree courses stretch normally over, say, five years, the enrolment ratios here calculated will be artificially swollen.

2. To some extent inter-country disparities may reflect differences in the coverage of research expenditure.

Table 6. PUBLIC CURRENT-EXPENDITURE, EARLY 1970s[1]
HIGHER EDUCATION

	Per cent share in "trend" GDP	Contributing factors :		
		Demographic ratio[2]	Enrolment ratio	Cost ratio
Australia	0.94	0.069	0.224	0.608
Austria	0.58	0.071	0.141	0.578
Belgium	0.70	0.060	0.217	0.538
Canada	1.44	0.070	0.351	0.629
	(1.95)			(0.797)
Finland	0.64	0.092	0.153	0.454
France	0.44	0.065	0.272	0.249
Germany	0.85	0.054	0.169	0.940
Italy	0.48[3]	0.058	0.198	0.417[3]
Japan	0.34	0.074	0.055	0.824
	(0.59)		(0.230)	(0.346)
Netherlands	1.43	0.069	0.226	0.916
Norway	0.69	0.062	0.2[illegible]	0.524
Sweden	1.13	0.061	0.251	0.737
Switzerland	0.87	0.060	0.120	1.197
United Kingdom	0.98	0.057	0.161	1.071
United States	1.46	0.073	0.355	0.562
	(2.25)		(0.471)	(0.653)
Dispersion[4]	0.35	0.009	0.078	0.252
Average[5]	0.79	0.066	0.190	0.635
	(0.86)		(0.213)	(0.615)

1. For the precise year covered for each country, see Table 4.
2. The demographic ratio applies to the population in a four-year age-span going from the last year of secondary education (e.g. if the latter stops at age 18, the group covered here will be the population aged 19–22). For details see Annex.
3. Includes capital costs.
4. Measured by standard deviation.
5. Geometric mean.

Note : The first column equals the product of the next three columns multiplied by 100. Figures in brackets for Canada, Japan, and the United States cover total (public and private) current educational expenditures.

the reasons for the growth of education expenditure over time. Tables 7 and 8 provide a breakdown of the main contributing factors to the great expansion recorded in the 1960s.[1] This analysis will follow the approach already used so far (i.e. consider the contributions made by demographic factors, changing enrolment ratios and increasing costs per student), but will in addition divide this last factor into its price and "real" components.[2]

In assessing the impact of changing prices on educational expenditures, it is important to choose an appropriate deflator. As is well known, public

1. Difficulties in obtaining data restrict the period of observation from 1963 (the first year for which consistent figures could be assembled) to the early 1970s.
2. The Annex provides a set of figures which subdivides the increase in expenditure in terms of annual percentage changes rather than changes in GDP shares.

expenditure is measured by the cost of inputs which makes it impossible to measure productivity increases.[1] This, in turn, means that the price index for the government sector tends to rise faster than that for the private sector, as civil servants wages must more or less keep pace, in the longer run, with those in the rest of the economy if the size and quality of the public sector labour force is to be maintained.

Education deflators are not always available and in a number of cases the public consumption deflator had to be used as a proxy. *A priori*, it would be anticipated that the use of the public consumption deflator would underestimate the rise in prices in the education sector because education tends to be more labour intensive than other forms of government expenditure. However, this does not always appear to be the case. In 2 of the 6 countries for which "education deflators", or some assessment of the rise in teachers salaries, could be made, the education deflator grew more slowly than that for total public expenditure and in three more it rose at roughly similar speed. Only in the Netherlands was the increase more rapid. Since, in any case, these various differences were not very large,[2] it was felt that the public consumption deflator could be taken as a reasonable proxy for the rise in the price of educational services in those countries where the sectoral deflator was not available.[3]

i) *Demographic Trends and Enrolment Ratios*

The growth of student numbers was impressive over the last decade and so was that of enrolment ratios. Some figures for a wider sample of countries are shown in Table 9. As can be seen, developments differed depending on educational levels. An important feature of demographic patterns since 1945 was the early post-war increase in birth rates. The ensuing population "bulge" initially put pressure on educational facilities at the compulsory levels which expanded considerably during the 1950s. By the end of the 1950s and early 1960s this group of students began to move into the upper secondary schools and then into post-secondary institutions. The major impact in non-compulsory secondary education was felt at the turn of the 1950s, and in post-secondary education in the mid-1960s. In the area as a whole, therefore, the number of school children rose only by some 2 per cent per annum over the past decade. For the 15 countries considered in greater detail in Table 7, demographic trends during the 1960s have tended to be negative after the peak of the population bulge had been passed. Since enrolment ratios rose, on average, by less than 10 per cent, the share of output devoted to primary and secondary education rose only little on account of the increasing number of pupils.

1. Belgium and Germany make some allowance for rising productivity but these are necessarily arbitrary.

2. For detail see the Annex.

3. With the possible exception of Canada for which there are indications that the rise in teachers' salaries was considerably above that of other public servants.

Table 7. CHANGES IN PUBLIC EXPENDITURE – 1963 TO EARLY 1970s[1]
PRIMARY AND SECONDARY EDUCATION
Ratio of end-year to initial year[2]

	Per cent share in "trend" GDP	Due to:				
		Demographic changes	Enrolment changes	Cost changes	Of which: Relative prices	Of which: Real relative inputs
Australia	1.522	0.988	1.109	1.388	1.219	1.139
Austria	1.505	1.081	1.120	1.243	1.278	0.973
Belgium	1.212	1.035	1.070	1.095	1.124	0.974
Canada	1.743	1.042	1.082	1.546	1.208	1.280
Finland	1.060	0.874	1.169	1.037	1.143	0.907
France[3]	1.202	0.950	1.089	1.161	1.101	1.055
Germany	1.500	1.132	1.072	1.233	1.243	0.992
Italy	1.022[4]	0.991	1.088	0.949[4]	1.182	0.803[4]
Japan	0.885	0.764	1.029	1.125	1.325	0.849
Netherlands	1.521	0.916	1.123	1.479	1.464	1.010
Norway	1.205	0.930	1.108	1.168	1.040	1.123
Sweden	1.344	0.846	1.174	1.351	1.192	1.133
Switzerland	1.206	1.003	1.096	1.093	1.086	1.012
United Kingdom	1.157	1.037	1.109	1.007	1.080	0.932
United States	1.284	0.965	1.059	1.256	1.132	1.110
Dispersion[5]	0.222	0.092	0.037	0.167	0.106	0.120
Average[6]	1.272	0.966	1.099	1.198	1.183	1.012
Contribution to total change (%)	..	14.5	39.3	75.2	70.2	6.2

1. For the precise year covered for each country in the early 1970s, see Table 4.
2. The change over the period has been put on to a common 8-year basis so as to facilitate cross-country comparisons.
3. Ministry of Education expenditures only.
4. Includes capital costs.
5. Measured by standard deviation.
6. Geometric mean.

Note: The first column equals the product of the next three columns.

The opposite was the case for higher education. In addition to the demographic changes already mentioned, there was a dramatic increase in enrolment for practically all the countries shown in Table 8 as well as for most other Member countries. On average, the annual growth rate of university and other higher level students was of the order of 8½ per cent per annum in the 1960s with peaks of 10 to 11 per cent in Belgium, Canada, France and Sweden. Several underlying factors may have contributed to this rise. Apart from a change in social aspirations, the most important one would appear to have been the rapid rise in incomes over the post-war period. On the demand side, this allowed parents to forego the earnings of their children for longer periods and to support them financially by paying tuition fees and maintenance allowances. On the supply side, higher tax revenues provided governments with the resources

to increase the number of student places, while student support was increased in an effort to improve access. In a number of countries a further factor may have been changes in the educational system itself which made it more attractive to students who found it easier to complete their training. More flexible education structures at the secondary level facilitated switching between the vocational/technical streams (directed towards the labour market) and the general/academic streams (directed towards further education) and helped to prevent students reaching a "dead end" in their educational career. In addition, short cycle non-university courses were introduced, which accepted students without the school leaving requirements of universities, and universities themselves adopted a more generous attitude in providing places for students with vocational/technical school leaving certificates. Finally, economic factors like wage differentials between holders of higher degrees and less qualified workers may have made a further contribution. In Europe, such differentials existed already prior to the recent very rapid expansion, but in North America part of the sharp increase in enrolment rates in the late 1950s and early 1960s and the subsequent slow growth are attributable to youths responding to the relative rise in the wage differential in the 1950s and early 1960s and the relative decline in the late 1960s.

ii) *Price Changes and Real Inputs per Student*

Total costs per student rose rapidly over this period, but related to per capita GDP their increase is not striking. At the primary and secondary level, there was an increase of some 20 per cent but at higher education levels relative cost ratios fell by 5 per cent. There is little evidence for an inverse relationship between unit costs and enrolment ratios for the school-age population, but there is some such relationship at university level. Thus countries in which higher education expanded most rapidly (Australia, France, Italy or Norway) witnessed above average falls in their total inputs per student. Conversely, the Netherlands and Austria in which enrolment ratios rose more moderately, witnessed stable or rising cost ratios. This would suggest the existence of a "trade-off" between the universality of higher education and its "quality".

The most important element in these changes in inputs per student has been the behaviour of prices. The contribution made by price changes is shown in the fifth column of Tables 7 and 8[1] and is expressed in terms of the rise in the public consumption (or education deflator), relative to the evolution of the GDP deflator.[2] The figures differ quite widely across countries with Norway at one extreme showing hardly any relative price increase and Austria, Japan and the Netherlands, on the other hand, recording relative increases over the period as a whole of the order of

1. The figures are the same for both levels of education since separate deflators were not available.

2. I.e. the 1.22 figure shown for Australia shows that, over the period, prices in the education sector rose 22 per cent more rapidly than in the economy as a whole.

Table 8. CHANGES IN PUBLIC EXPENDITURE – 1963 TO EARLY 1970s[1]
HIGHER EDUCATION

Ratio of end-year to initial year[2]

	Per cent share in "trend" GDP	Due to :				
		Demographic changes	Enrolment changes	Cost changes	Of which : Relative prices	Of which : Real relative inputs
Australia	1.759	1.113	2.105	0.751	1.219	0.616
Austria	1.824	1.105	1.265	1.305	1.278	1.025
Belgium	1.952	1.180	1.794	0.921	1.124	0.819
Canada	3.975	1.316	1.617	1.868	1.207	1.547
Finland	1.725	1.459	1.273	0.928	1.143	0.812
France[3]	1.482	1.220	1.843	0.659	1.101	0.599
Germany	1.239	0.978	1.510	0.839	1.243	0.675
Italy	1.904[4]	1.028	2.132	0.868[4]	1.182	0.734[4]
Japan	0.817	0.960	1.476	0.576	1.325	0.435
Netherlands	2.238	1.263	1.289	1.373	1.464	0.938
Norway	1.664	1.016	2.093	0.783	1.040	0.753
Sweden	1.787	1.082	1.711	0.966	1.192	0.810
Switzerland	1.862	0.923	1.603	1.258	1.086	1.158
United Kingdom	1.758	1.032	1.757	0.969	1.080	0.897
United States	1.706	1.203	1.599	0.886	1.132	0.783
Dispersion[5]	0.651	0.143	0.280	0.319	0.106	0.255
Average[6]	1.754	1.116	1.648	0.953	1.183	0.806
Contribution to total change (%)	..	20.1	88.4	-8.6	30.5	-39.1

1. For the precise year covered for each country in the early 1970s, see Table 4.
2. The change over the period has been put on to a common 8-year basis so as to facilitate cross-country comparisons.
3. Ministry of Education expenditures only.
4. Includes capital costs.
5. Measured by standard deviation.
6. Geometric mean

Note : The first column equals the product of the next three columns.

30 to 40 per cent. The development of teachers' salaries relative to other wages and salaries is one reason for these disparities. Another one may be linked to the different conventions countries follow in compiling their national accounts statistics.[1]

The last columns in the two tables show the change in "relative real" inputs per student over the period. These figures represent residuals after the growth of prices and enrolments have been taken into account. To the

1. Conventions for deflating inputs vary widely across countries. Four different methods were applied in the 1960s to measure "real output" in the education sector in eleven OECD countries; see T.P. Hill, *The Measurement of Real Product*, OECD 1971, pp. 50-1.

Table 9. GROWTH RATES IN FULL-TIME STUDENT ENROLMENT
1960 to 1970[1]

Average annual percentage changes

		Primary and secondary education	Higher education
Australia	(1961–72)	2.4	9.5[2]
Austria		3.2	4.8
Belgium	(1960–69)	2.9	10.9
Canada		3.3	11.3
Denmark	(1965–82)	0.5	8.1
Finland[3]	(1960–73)	0.1	6.8
France		1.5	11.2
Germany	(1960–71)	3.1	8.0
Ireland	(1965–72)	2.6	4.7
Italy		2.9	9.6
Japan		-1.6	9.0
Netherlands	(1960–71)	1.3	7.2
Norway	(1960–71)	1.1	8.2
Portugal	(1960–71)	2.6	8.1
Spain		5.1	9.4
Sweden		0.7[4]	10.0[2]
Switzerland	(1961–69)	1.6	7.1
Turkey		6.6	9.6
United Kingdom	(1965–70)	2.3	8.4
United States	(1960–71)	1.9	7.5
Dispersion[5]		1.7	1.8
Average[6]		2.2	8.5
Average EEC[6]		2.1	8.5

1. Unless otherwise stated
2. 1960 to 1972, university students only
3. Includes part-time students.
4. 1960 to 1973.
5. Measured by standard deviation
6. Arithmetic mean

Source: OECD, *Educational Statistics Yearbook*, 1974, Vol. II.

extent that any of these elements are in error, they will bias the figure for "real" growth as well. As they stand, results show that "real" inputs remained virtually stable in primary and secondary education, but fell quite sharply almost everywhere at higher levels. It must, of course, be remembered that these figures are relative to GDP per capita. For resource allocation purposes such results are probably the relevant ones. But, in terms of the quality of educational output, it may be more appropriate to look at changes in the absolute figures. These suggest some improvement at school levels (real inputs per pupil rose by some 4½ percent per annum between 1963 and the early 1970s), but very little for higher education.[1]

1. For further detail, see Annex.

These figures need, however, some further qualification since they may reflect not only improvements in quality but also shifts in enrolment towards more expensive forms of education (e.g. upper secondary or post-graduate). The bulk of any real improvement which has taken place, is likely to have come from the increase in teaching and support staff. The extent of this increase is difficult to assess. Some indication is given by looking at teacher/pupil ratios although such statistics are considered poor indicators of the level of teaching resources.[1] The available data indicate that the number of teachers per student in primary and secondary education increased over the period and that pupil-teacher ratios fell by perhaps 5 per cent. In higher education the trends are quite different and pupil-teacher ratios have declined only slowly, or have risen in some cases. Such developments have been most marked in those countries where enrolments have risen most rapidly and provide further evidence of some inverse relationship between the growth of per student costs and the rise in student numbers.

CAPITAL FORMATION

The improvement in "real" teaching inputs, at least at the primary and secondary levels went hand in hand with increases in non-labour inputs. It is not possible to provide as complete a picture for this aspect of educational expenditure. The data tend to be poor and, in many cases, cannot be broken down by level. More importantly, what would be required to assess inputs are the services of the capital stock in the education sector rather than the investment flows which are open to variation from one year to another depending upon budgetary decisions and timing. Investment in education can only serve as a very rough indicator for the supply of capital services.

Nonetheless, in terms of government financing, and of the growth of education expenditure, investment flows are of some importance. Hence, the few available figures are presented in Table 10. Capital expenditures tend to be on balance approximately 20 per cent of total expenditure on education and 1 per cent of GDP for the countries studied. It is difficult from the data at hand to discern apparent trends in the growth rates, as only one year has been taken and expenditures may be higher or lower than the trend due to timing and lumpiness in investment. Nonetheless, there would appear to be some tendency over time for capital expenditures in primary and secondary education to remain stable or decline slightly

1. The main reasons usually given are (*i*) the ratios ignore increases in administrative staff which may indirectly improve the education provided; (*ii*) rises in teacher-pupil ratios may not have meant a decline in average class size, but may have been translated into a reduction in required teaching loads giving teachers greater time for class preparation and student support; (*iii*) such ratios do not take account of the probable improvement in the quality of teaching as more highly qualified staff become available and new education techniques are introduced.

Table 10. PUBLIC CAPITAL EXPENDITURE, 1963 AND EARLY 1970s[1]

Percentage shares in "trend" GDP

	Primary and secondary education		Higher education		Total[2]		Growth of total expenditure 1963 to early 19 (Average annual percentage chan	
	1963	Early 1970s	1963	Early 1970s	1963	Early 1970s	Current prices	Con pri
Australia	0.41	0.54	0.19	0.28	0.60	0.82	13.5	
Austria	..	0.94	..	0.18	0.56	1.14	18.0	
Belgium	0.38	0.28	0.06	0.17	0.44	0.45	9.8	
Canada	0.73	0.73	0.33	0.51	1.06	1.24	11.6	
Finland	1.25	0.52	0.13	0.12	1.38	0.73	5.5	
France	0.16	0.23	0.17	0.09	0.43	0.33	7.6	
Germany	0.61	0.78	0.25	0.38	0.85	1.17	13.1	
Japan	0.79	0.90	0.02	0.11	0.81	1.01	19.5	
Norway	0.94	0.91	0.10	0.06	1.04	0.97	8.9	
Sweden	0.83	0.78	0.07	0.46	0.95	1.25	12.3	
Switzerland	0.62	0.94	0.11	0.27	0.73	1.22	16.4	
United Kingdom	0.80	0.96	0.21	0.23	1.10	1.26	0.2	
United States	0.62	0.47	0.24	0.25	0.86	0.72	5.7	
Average[4]	0.68	0.68[5]	0.16	0.25[5]	0.83	0.95	11.8	

1. For the precise year in the early 1970 covered for each country, see Table 4.
2. May include some expenditure not allocated by level.
3. Current price figures were deflated with the help of the implicit national accounts deflator for "Other construction", except for Belgium (which has a deflator for investment in education) and Japan (where the residentia tion deflator had to be used).
4. Arithmetic mean.
5. Excluding Austria.

Table 11. SELECTED ITEMS OF PUBLIC EXPENDITURE ON EDUCATION IN THE OECD AREA

	$\frac{EE}{GDP}$	Demographic ratio	Enrolment ratio	Cost ratio
	LEVELS – EARLY 1970s *In per cent of "trend" GDP*			
Primary and secondary education (15 countries)	3.31	0.21	0.89	0.18
Higher education (15 countries)	0.79	0.07	0.19	0.64
Capital expenditure (13 countries)	(0.95)	..	..	..
	CHANGES – 1963 TO EARLY 1970s *Ratio of end-year to initial year*			
Primary and secondary education	1.22	0.97	1.10	1.20
Higher education	1.75	1.12	1.65	0.95
Capital expenditure	(1.12)	..	..	..
	CONTRIBUTIONS – 1963 TO EARLY 1970s[1] *In per cent of "trend" GDP*			
Primary and secondary education	0.71	-0.10	0.28	0.53
Higher education	0.34	0.07	0.30	-0.03
Capital expenditure	0.12	–	..	..
TOTAL	(1.17)	-0.03	0.58	0.50[2]

1. Contribution of change in determinant to change in ratio to GDP.
2. Of which: 0.59 due to price changes and -0.09 to "real input" changes.

as a proportion of total education expenditure and to rise in higher education. This pattern could be expected. The rapid increase in the number of school age children during the 1960s began to taper off in the second half of the decade, thus requiring less expansion of physical facilities. In contrast, the expansion of higher education accelerated towards the end of the period reflecting the general rise in enrolment ratios. There are, understandably, considerable lags in the impact of increased number of students, pressures rising for expansion only some time after student numbers rise and the amount of facilities becomes clearly inadequate.

A summary picture of the discussion of this chapter is presented in Table 11 which assembles only figures for OECD averages. Neither all expenditure flows nor all countries are covered, but a broad impression of very aggregate trends can be gleaned. The main points can be summarised as follows:

i) Primary and secondary education represents the bulk of education expenditure in the area, largely on account of the number of pupils it covers; higher education is imparted to a much smaller proportion of the area's population (less than 1½ per cent), but costs per student are perceptibly higher;

ii) Through time, the largest increase, in percentage terms, has come from higher education whose share in total expenditure has risen from less than 15 to some 20 per cent of the total;

iii) Costs per student, relative to GDP per capita, have risen moderately in primary and secondary education and fallen in higher education; "real" inputs, however, have either remained stable or fallen sharply;

iv) Very broadly, of the 1 per cent increase in the share of GDP of education expenditure here subdivided, 10 per cent is due to rising capital inputs. The remainder can be entirely attributed to two factors whose weights are roughly equal – the increase in student numbers (especially at the higher level), and the rise in the relative price of education.

Chapter 2

EXPENDITURE AND ACHIEVEMENTS

The previous chapter described the growth of the education system during the 1960s and early 1970s in very broad and general terms. However, the analysis was in many ways "mechanical" for it neither explained the underlying reasons for this expansion nor assessed whether increasing inputs had been reflected in higher "outputs". In theory, any survey of past efforts should try to see to what extent higher expenditures produced measurable results and/or fulfilled the objectives which had been set. In practice, however, this is not possible because neither results nor objectives can be defined at all clearly. The following discussion will review these two issues in turn but will be unable to come to any very definite conclusions.

THE "OUTPUT" OF EDUCATION

Measuring the "output" of a service such as education is, for well-known reasons, a practically impossible task. According to national accounting conventions, the value of public sector output is measured by the value of inputs. This, however, has always been considered a second-best result, for without a better indication of the value of the different services provided by the government, it has been difficult for decision makers to know whether the mix and the overall quantity of such services were in line with society's demands. An alternative approach has emphasized the valuation the market puts on the earnings of graduates of the educational system. This approach has given rise to a whole body of literature which has stressed the private benefits obtainable from study, the creation of "human capital", the relationship between education and economic growth, etc. But, whatever one's view on the value of such theoretical frameworks, it would seem that any measurement of the "output" of education should go beyond assessing the purely monetary "reward" which even a perfectly competitive market might ascribe to either teachers or graduates.[1]

1. The results of education can also be assessed in terms of a number of pedagogical criteria, but it would seem that such an approach goes well beyond the scope of this paper.

Rather than starting, therefore, with the salaries of teachers (broadly the main component of the input method), or with the salaries of graduates (the basis of the human capital approach), a more satisfactory alternative would be to try and assess tne effects of educational spending in terms of some "educational attainment indicators" which would show whether increasing expenditures have had an impact on individuals' educational standards. Though work at the OECD and in other international organisations is proceeding on the whole field of social indicators, no fully fledged list can as yet be considered operational and only a few proxies can be suggested here. One possible measure could be the increase in the number of graduates. Naturally, such a criterion is not devoid of difficulties and ambiguities. It is clear that, if inadequate account is taken of other inputs into the educational system (e.g. changes in teaching methods, new curricula, more or better physical facilities), increasing enrolment ratios could well be meaningless or even indicate a deterioration in educational standards. Nevertheless, in the light of the preceding chapter's discussion, it would seem that, broadly, over the last decade, quantitative progress of this nature was achieved. Enrolment ratios have risen dramatically in all countries and the average length and level of schooling has gradually increased. In addition, there has been some absolute (though not relative) rise in "real inputs" per student. These increased expenditures may have reflected improved academic standards of the teaching staff and better physical facilities. Coupled with new curricula and teaching methods, such changes are likely to have improved the quality of education, at least at the primary and secondary levels (which cover 90 per cent of the student population).

Trying to account for qualitative rather than solely quantitative improvements in education poses greater difficulties. A possible indicator of the effects of educational expenditure over this period could be movements in illiteracy rates. As shown in Table 12, however, in most countries of the area literacy for the great bulk of the population had already been achieved by the 1950s if not earlier. A further measure which could in theory improve on the purely quantitative achievement of higher enrolment ratios would be an indicator of the type of qualification and degrees obtained by students. But quite apart from the difficulties involved in the collection of such data, continuous changes in curricula and the very different standards enforced across countries would throw doubt on both inter-temporal and inter-country comparisons.

It is clear, in any case, that these indicators are but intermediate and imperfect measures of the achievements of education. A more appropriate assessment would try to evaluate the effects of educational spending in terms of the aims which governments have set themselves. One such aim must, of course, have been an increasing supply of better quality education open to as large a number of students as possible. In the light of the preceding discussion it could be argued that the rise in educational expenditure has corresponded to this particular form of government concern. But it is unlikely that this was the only, or even the main, objective of public policies in the education field. A variety of other goals has frequently been put forward whenever the issue has been debated. They will be briefly reviewed in the following paragraphs.

Table 12. ILLITERACY IN SELECTED OECD COUNTRIES
Percentage of population aged 10 and over[1]

	In the vicinity of:			
	1910	1930	1950	1970
Belgium[2]	13.4	7.8	5.9	..
Canada	(6.4)	4.3	..	..
France	11.9	5.3	3.3	..
Greece[3]	59.7	40.9	25.9	15.6
Italy	37.2	21.6	14.1[2]	..
Portugal	68.9	60.2	(47.0)	..
Spain	52.0	31.9	(17.3)	(8.8)
United States	7.7	4.3	3.2	1.0

1. Unless otherwise stated.
2. Percentage of population aged 15 and over.
3. Percentage of population aged 8 and over until 1930, aged 15 and over since then.

Sources: UNESCO. *Progress of Literacy in Various Countries*, 1953 and *Statistical Yearbook 1963*; various national statistical yearbooks.

THE GOALS OF EDUCATION

A distinction should be drawn at the outset between the social and the private goals of education. The latter are fairly easy to recognise and reflect individuals' desires to improve their knowledge and incomes. To a large extent the growth in the size of the public sector must have been induced by such private motivations. Yet, the decision of the State to supplement or replace by a public service what the market would have supplied in terms of education, has clearly gone beyond the simple response to a private need. It has presumably reflected the idea that countries could reap further "external" benefits from widespread education. Thus, it can be argued that when an individual obtains education, this not only increases his earning power but also confers an external benefit on society on the assumption that the country's cultural levels will be higher, or even that the social order will be maintained. Moreover, government control over education also ensures some common standards in teaching and makes it easier to ensure equality of opportunity. It is the presence of such "externalities" which is presumably the main justification for government to supply more educational services than the private sector would demand if it were charged the full cost on an individual basis.

However, a definition of such "external" goals is not very easy in practice since private and social objectives are frequently intermingled. In addition, any survey of the goals of education for as wide a sample of countries as here considered cannot hope to be either precise or all-embracing and will, by necessity, have to remain somewhat superficial. Each country has had particular reasons for increasing expenditure in certain

areas and a full analysis would require a close study of the historical and political context in which these decisions were made. This is not possible in a document of this nature. It may, moreoever, not be very rewarding because few countries have clearly defined what their objectives have been.[1] Nonetheless, in retrospect, it would appear that the debate over education during the 1960s in many OECD countries had some similarities. It is possible to distinguish a certain number of "goal areas" which, to a greater or lesser extent, motivated governments to expand education. But it is necessary to emphasize that considerations of this kind are not internationally comparable. There is no objective way of assessing the goals of the education system in one country, let alone in all the countries covered in this report. Three objectives will be discussed below which appear to be broadly representative of those that governments have taken into account when making decisions in this area in the past:

i) Transmission of cultural values;

ii) More rapid economic growth;

iii) Economic and social equality.

i) *Transmission of Cultural Values*

To a large extent the transmission of information and cultural values can be considered a private benefit. In this context, education provides possibilities for personal development and broadened interests by giving individuals access to the accumulated knowledge and cultural heritage of their societies. In addition, for some people, education is felt to be a rewarding experience or, at least, more enjoyable than working. While these are certainly private benefits, there are also important social considerations. Indeed, perhaps one of the original aims of mass education was to ensure that all members of society could participate as citizens in a complex social environment. Moreover, education can improve the cohesion of society by imparting a common language and culture and establishing patterns of behaviour consistent with democratic standards. In some countries it has been felt that education could also contribute to maintaining a certain pluralism in society, by allowing choices between various types of schools (in function of, for instance religious, institutional or regional differences). Finally, considerations of national prestige may sometimes also play a role.

ii) *More Rapid Economic Growth and Improved Resource Allocation*

Rapid growth has been one of the more general aims of practically all Member countries over the last decade and it could well be argued that increasing education was one means used to further this objective.

1. For example, equality of educational opportunity has been suggested as one goal of the education system. This can be interpreted in various ways stretching from equality in terms of entrance to equality in terms of achievement. These approaches imply very different educational policies.

In this field, too, private and social returns would seem to be intertwined. Higher levels of education permit an individual to undertake tasks requiring greater qualifications and knowledge and this is reflected in higher lifetime earnings – largely a private benefit. At an aggregate level, any resulting increase in productivity leads to higher rates of economic growth which may have beneficial effects on society at large. In fact, in many countries, the rapid expansion of the public sector in education in the 1960s would seem to have reflected a belief that there had been a great underinvestment in the stock of skills in the economy. This was thought to result, in part, from imperfections in capital markets and from uncertainty, which made students unable or unwilling to finance their education, and in part from the general lack of student places. Thus, additional public support for education was warranted to offset these effects and ensure an increased supply of skilled manpower.

A further objective of government support for education was based on the belief that the long lags involved in the education process made it unlikely that the correct mix of skills would be available to the economy at any one time. This led to efforts in manpower planning and, in some countries, to an emphasis upon expansion of higher education in certain areas such as science. An additional objective in the same context has been the encouragement of research and development. Because of the uncertainty and low market value of basic research and knowledge it was generally felt that the latter would not reach the socially optimum level in the absence of government support. This support was directed towards higher education institutions, partly because universities and technological institutes play a leading role in basic research and partly because these activities are often a necessary element in maintaining high intellectual standards and up-to-date information in teaching.

iii) *Economic Equality and Social Mobility*

Education is believed to affect economic and social equality in two main ways. Firstly, by increasing the amount of "educated" manpower relative to "non-educated" manpower, it should bring about a narrowing of wage differentials between these two groups.[1] Secondly, it can lead to greater social mobility by increasing the "life chances" of those in lower socio-economic classes. Indeed, this latter consideration was probably an important factor in the expansion of educational expenditure over the last decade. It was felt that higher levels of education would improve the probability that the intelligent child from a lower income group would make best use of his or her ability. Such views were founded not only upon the more general ethical considerations regarding the need for equal participation in education, but also upon the belief that many children were prevented by structural and socio-economic factors from making their full potential contribution to society.

1. Similarly, by expanding teaching in particular bottleneck sectors it could lessen the monopoly power of holders of very specific skills.

RESULTS

A desire to reach these goals, amongst others, has undoubtedly been a motivating force for increasing public expenditures in education at different levels at one time or another. But, whether such expenditures have been successful in reaching these objectives – or even making progress towards them – would seem to be an almost impossible question to answer. For instance, it is unknown to what extent the rise in the role of the public sector was accompanied by increasing "external" benefits which the private sector, if left to its own devices, would have been unable to provide. Nor is there any objective way of assessing to what extent was progress made in achieving the three objectives mentioned earlier. Thus, taking the aim of increasing the cultural standards of the population, it can be presumed that more and better education should have made life in our societies "richer", but it is impossible to go beyond such very broad judgements (which could in any case be confronted by similarly sweeping statements).

A rather serious criticism, in view of the great emphasis placed on output growth during the past decade, has been the challenge to the idea that education influences economic developments. For a long time, it had been felt that differences in educational systems and efforts could be one important variable explaining differences in output growth rates. The best-known example of an attempt at quantifying this theory was E. Denison's work,[1] which showed, for a number of OECD countries, the "contribution" to growth made by education over the 1950–1962 period. The assumptions used in that approach are debatable, but the recent reappraisal of the whole issue has gone beyond such criticism. It has been argued that while people with more education earn higher incomes and earnings, these do not necessarily reflect a higher productivity level obtained from their training and that the education system with its "credentials" merely acts as a "filter" for selecting those who have the best aptitudes for work.[2] Skills then are earned by "on the job" training. As the number of graduates with credentials increases, firms upgrade their job requirements, demanding higher qualifications than are necessary. But the debate is not closed and the importance of the 'credentials' argument has been challenged on theoretical and empirical grounds. For example, it has been argued that it could not be a significant long-term influence in competitive labour markets, such as those found in North America. In addition, studies of situations in which screening could not be relevant such as for self-employed farmers and non-market behaviour indicate that education has increased efficiency.[3]

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1. E. Denison, *Why Growth Rates Differ*, Washington 1967.
2. See I. Berg, *Education and Jobs: The Great Training Robbery*, New York 1970, and K.J. Arrow, "Higher Education as a Filter", *Journal of Public Economics*, July 1973.
3. F. Thomas Juster (ed.), *Education, Income and Human Behavior*, McGraw-Hill, 1974; B. Chiswick, "Schooling, Screening and Income", in L. Solmon and P. Taubman (eds), *Does College Matter?*, New York 1973.

Efforts to influence the mix of skills to bring them in line with the demands of the economy have not proved particularly successful either. Forecasts of the future mix of skills have been open to wide margins of error. At the same time, the high substitutability of labour – even highly trained labour – has meant that the economy has been able to adjust fairly rapidly to apparent short-run disequilibria in the supply of and demand for specific categories of workers, particularly by means of "on the job" training. It has also been suggested that there has been some tendency towards oversupply of educated manpower in the recent past in some countries. While the labour market has been able to absorb the increased supply, albeit with a slightly greater lag, individual returns to education may have declined.

It is likely that such more recent arguments have perhaps exaggerated the absence of (or even the perverse relations between) growth and education, just as the earlier attempts at providing quantified estimates may have resulted in simplistic conclusions. It would seem beyond doubt that, over time, education has contributed to economic growth and must have been one of the main reasons for the present gap between living standards in the developed and in the developing world. But its effects on growth probably seep through only slowly, take time to materialise and, in more recent years, may have been translated as much in increasing "welfare" (in the form of access to culture) as in increasing measured output. Thus, though education has certainly enhanced economic growth, it is difficult to use this general knowledge for the framing of policy guidelines, particularly concerning the allocation of expenditure between various levels and types of education.

On the question of the influence on social equality – an area of intense and unresolved debate – it appears, on the scanty evidence available, that achievement has fallen short of expectations and that the education systems have not had a great impact in raising the chances of upward mobility of children in the lower income groups, let alone in trying to achieve some form of equality of result or attainment. Very limited data on participation rates by socio-economic classes indicate that large differences in participation at the secondary and higher levels of education continue to exist in nearly all countries. Some narrowing in the dispersion over time can be observed, particularly at the secondary school level for those countries where enrolment rates are nearing maximum levels (e.g. the United States or France). For higher education more data are available. It appears, on the whole, that the benefits of expenditures have gone more to the middle classes than to less privileged social groups. It is also true that inequality of access has been reduced in a large number of countries, especially in recent years, but the differences in participation rates remain striking.[1]

In retrospect such developments are perhaps not surprising. It would seem fairly natural that the first impact of a large effort in higher education

1. See OECD. *Educational Growth. Education and Distribution of Income and Group Disparities in Educational Participation and Achievement.* Conference on Policies for Educational Growth. 1971.

should benefit those social classes best prepared to make use of the expanded services. Effects on lower groups can only but come through with time lags. Moreover, social mobility may well be a matter of intergenerational movements and can hardly be expected to increase dramatically after an educational effort which has lasted for less than twenty years. Also, the achievements of students would appear to be dominated in large part by factors outside the education sector, which is itself determined by the values of the society within which it operates, thus limiting its effect as a social leveller. Finally, education is only one instrument in a wide range of possible government policies already in use which can influence equality in its different dimensions.

Effects may have been forthcoming on wage differentials between the more and the less educated. Some narrowing in such differentials has been apparent over the longer-run, and is confirmed by cross-section data on earnings disparities between manual and white collar workers in underdeveloped and highly developed economies. Scattered (but hardly conclusive) evidence suggests that this movement may have been accelerating in the last decade given the much larger number of university graduates who have entered the labour market.[1] Hence at this level, some movement towards greater equality may have taken place. This is not to say, however, that household income distribution has necessarily improved nor that within the very broad categories here considered, differentials have necessarily become smaller.

The foregoing discussion has not been very conclusive. But some measures of agreement can perhaps be expressed on the following few points. Firstly, precise (or even imprecise) statements on goals and objectives (let alone on procedures for evaluating the efficiency of education in meeting such goals) are practically non-existent. Secondly, of the few objectives and indicators selected for treatment in this chapter, it would seem that:

i) Increased educational expenditure had measurable results in extending its coverage of the population of student age and may also have achieved higher education standards;

ii) The effects of education on measured economic growth over this short period can hardly be verified; it can be presumed, however, that their effects on longer-run growth and on welfare are positive;

iii) Little evident progress was made on the issue of social mobility, insofar as access to higher education has largely remained the prerogative of particular classes;

iv) Some measure of economic equality may have been achieved thanks to the very rapid and perhaps not fully digested increase in the number of university graduates.

It is clear that no startling conclusion can be reached on the basis of this limited list of "results". It can perhaps be suggested that increased

1. However, developments in this field are also influenced by many other factors, such as government action, trade union pressures etc.

educational expenditure may have been more effective in enhancing purely private benefits than in achieving some of the more social goals, and notably equality.[1] But no definitive judgement can be expressed on whether the expansion of education was worthwhile or not. For one thing, the period here considered is far too short for it to be possible to properly assess education's impact on both growth and social justice. For another, such verdicts can only come through the political decision-making process. It is each country individually which must be left to evaluate the successes and failures of its public programme in this area.

1. It may be interesting to compare some of these conclusions with those reached in the study on income maintenance expenditures (*op. cit.*, Ch. 3). In both cases it would seem that broadly defined "democratic" objectives were more important over the past decade than "egalitarian" aims. In other words, the provision of a particular service or benefit has been extended to as large as possible a segment of the population, but little effort has been made to actively redistribute the provision of this service or benefit in favour of the less fortunate members of society.

Chapter 3

A FORWARD LOOK

The review of the growth of past expenditures and of its underlying determinants leads to the question of trends during the coming decade. It is difficult to establish a rigorous framework for projections in this field. The most satisfying approach would be to use a set of demand and supply relationships derived from past experience upon which estimates of expenditure in the future could be based. But economics is unable to produce analytical methods which can deal in a quantitative way with the problems particular to public decision making. A more realistic approach is to study government forecasts for future spending on education. Unfortunately, very few Member countries have constructed medium term plans containing education expenditure forecasts and, where such projections were made, they have often been subject to change in the face of political and economic requirements.

Nevertheless, in the absence of such information, it is still possible to look at some of the determinants of the growth of educational expenditures described earlier in order to assess their future importance and their likely impact on government spending. One way of doing this would be by extrapolating past trends or income elasticities. Such an approach, however, is very mechanical and will only be used for illustrative purposes. It was felt more appropriate to follow a somewhat different methodology which, first, isolates those demographic (and price) influences which would appear to be beyond the control of governments and then assesses the order of magnitude of certain policy changes that might increase, or slow down, the growth of public expenditure in this area.[1] The aim is not to present an accurate projection of expenditure in the countries studied. Quite clearly this would be impossible, both because the data are inadequate and because in many countries education systems and policies are in constant evolution. What the following paragraphs will provide is a set of hypothetical scenarios for 1985, based on a number of feasible alternative assumptions. But it should be stressed that these hypotheses need bear no relation to official thinking

1. This approach is very close to the one already developed in OECD, *Public Expenditure on Income Maintenance Programmes*, 1976.

on this matter. Thus, whenever possible, the theoretical results will be qualified by what scanty information is available on countries' own forecasts and stated intentions.

The present chapter will deal only with the "formal" education system. New demands on education budgets stemming, for instance, from the introduction or expansion of programmes like pre-primary or recurrent education will be considered in the following chapter. The projections deal explicitly only with public expenditure. In those countries in which the private sector looms large, it is implicitly assumed that the shares of private and public education recorded in the early 1970s will not change. This simplifying assumption may lead to some under-estimation of government spending if, for instance, countries were to enlarge the size of the public sector. Thus, in the United States, it is expected that the relative importance of private universities may decline somewhat in the future[1] and Finland has announced its intention to gradually absorb its heavily subsidised private sector at the secondary level into the state system. On the other hand, the proportion of students attending private institutions rose in Japan through the 1960s. A continuation of such trends would diminish the future claims on the public sector.

THE ASSUMPTIONS

The approach follows the framework already applied in Chapter 1. In other words, it does not project absolute levels of expenditure but GDP shares. This avoids the need for a forecast of 1985 total output in current prices – a forecast which, in present circumstances, would be particularly difficult. However, it is implicitly assumed that future growth rates will not be fundamentally different from those recorded in the past. Should this not be the case, it could be that priorities in resource allocation might change and that previous relationships between, for instance, output per capita and costs per student may not hold any longer. Three arbitrary assumptions were used as a basis for the projections. Needless to say, they represent only a small portion of the possible hypotheses that could be chosen. The assumptions project changes in the three component ratios of the share in GDP of educational expenditure. A distinction is, however, drawn between factors which could be considered outside the control of governments (which affect the demographic ratio) and those which can be influenced by government policies (which lead to changes in the enrolment and cost ratios). The three assumptions are:

Assumption A: Expenditures as a percentage of GDP are projected on the basis that they would only be affected by demographic trends, with real inputs per student rising at the same rate as GDP per capita;

1. Department of Health, Education and Welfare, *Projections of Educational Statistics to 1982-83*, Washington 1974.

Assumption B: Expenditures are projected on the basis that enrolment ratios would change in addition to the changes under Assumption A;

Assumption C: Expenditures are projected on the basis that there would be also some convergence between countries towards "best practice" levels in costs per student in relation to GDP per head.

The combination of these three assumptions (spelt out in greater detail below), provides a set of results ranging, in "real" terms, from the least to the most ambitious. To assess the 1985 weight of the public education sector in total expenditure, a current price projection is also required and, therefore, an estimate of the education price deflator relative to that of total output. Given the wide disparities recorded over the past in countries' relative public consumption or education deflators, an independent forecast was not attempted. Hence, the projections to 1985 will assume that past trends in the relative deflator will continue.[1] In many ways, therefore, this assumption is of a similar nature to that on demographic trends. It implies a change in the financial burden which is "non-discretionary", i.e. beyond government control. These various assumptions are open to discussion, but they did not appear unreasonable within a context in which only rough orders of magnitude are given.

i) *Assumption A*

The first variant shows the effects of demographic changes on the share of education expenditure in GDP, assuming no changes in either enrolment or cost ratios.[2] It should be noted that, under this assumption, real costs per student are not held constant at an absolute but at a relative level. Relative constancy implies that, over the range of per capita incomes here considered, governments will tend to expand the amount of resources in proportion to the rise in the general level of income in society, rather than reaching some absolute level of teaching quality after which no expansion in real resources would seem necessary. This view does not appear unreasonable given the experience over the recent past. To be sure, the growth in real inputs per student at higher levels of education has been slower than that of the economy as a whole. But this could have been expected in the light of the extraordinary growth in student numbers. A better example is probably given by compulsory education where enrolment ratios were close to 100 per cent over the whole period and the rise in student numbers smaller. At this level of education where, in some sense, a certain "standard" had already been reached in the early 1960s with full enrolment, real costs per student continued to rise, roughly in line with GDP per capita.

1. This assumption was also used in OECD, *Expenditure Trends in OECD Countries, 1960-1980*, 1972.

2. Population data were taken wherever possible from latest national projections. In a few cases use had to be made of the, possibly outdated, figures contained in OECD, *Demographic Trends 1970-1985 in OECD Member Countries*, 1974.

The results of the projection under assumption A are given in Tables 13 and 14 for lower and higher education levels respectively. In real terms, they indicate that the effect of demographic changes on the share of expenditures in GDP is, on average, negative. The impact is marked at the primary and secondary level where the effects of a slower forecast growth in population in many countries will be first felt. There is, of course, some variation between countries, particularly at the lower levels of education. Thus the North American countries and Finland could reduce their expenditures by roughly 1 per cent of GDP against the negligible savings shown for Italy, Japan, Norway or Sweden. For higher education, the dispersion is smaller and goes from a 0.2 per cent reduction in the GDP share of expenditure in the United States to a ¼ per cent rise in Germany.

Table 13. PROJECTION OF EXPENDITURE ON PRIMARY AND SECONDARY EDUCATION
Percentage shares of "trend" GDP

	Actual early 1970s[1]	Hypothetical changes to 1985 under :		
		Variant A	Variant B	Variant C
Australia	2.62	0.20	0.42	1.40
Austria	3.27	-0.31	-0.20	0.46
Belgium	4.20	-0.68	-0.66	-0.47
Canada	5.03	-1.39	-1.21	-0.57
Finland	4.81	-1.01	-1.01	-0.69
France	2.69	-0.10	-0.06	0.87
Germany	2.17	-0.40	-0.28	0.06
Italy	3.00	-0.06	0.81	1.31
Japan	2.22	0.05	0.05	0.98
Netherlands	3.84	-0.53	-0.04	0.49
Norway	3.85	0.05	0.14	0.49
Sweden	4.22	-0.03	0.08	0.08
Switzerland	2.69	-0.36	0.15	0.84
United Kingdom	2.86	-0.19	0.08	0.90
United States	3.69	-0.85	-0.85	-0.13
Dispersion[2]	0.87	0.44	0.55	0.64
Average[3]	3.31[4]	-0.42	-0.23	0.40

1. For exact years, see Table 4.
2. Measured by standard deviation.
3. Arithmetic mean.
4. Geometric mean.

ii) *Assumption B*

Assumption B adds the effects of higher enrolment ratios to the changes in expenditure resulting from demographic developments. The choice

of future enrolment ratios was necessarily arbitrary given the wide variation in educational structures especially at the upper secondary and higher levels. An enrolment ratio of 97.5 per cent was chosen for primary and secondary education combined (as against the present 90 to 95 per cent ratios).[1] Given an average schooling period of 12 years of which 10 are compulsory (and for which near 100 per cent enrolment ratios can be expected), this implies an average enrolment ratio of 85 per cent in the last two years.[2]

Projections for higher education were complicated by the wide inter-country variation in the length of studies and the range of age of university students. For example, whereas in the United Kingdom and Japan higher education normally lasts about three years and mainly concerns people in the 18 to 21 year age group, the length of studies in the United States can be much greater and cover a significant proportion of people in the age group 18 to 24. Beyond these structural features there have also been substantial past differences in the rates of growth of enrolment and enrolment ratios. Over the last decade enrolment ratios grew by 5 to 7 per cent per annum in countries like Austria and Finland, but by as much as 11 per cent in Belgium, Canada or France.

Trends over the 1960s were clearly influenced by the strong belief in the relation between levels of higher education and income growth, both aggregate and personal. This led to increased demand on the part of the general public and greater supply of student places as, other needs being satisfied, governments felt able to devote more resources to this area. However, in recent years, there has been a marked slowdown in the growth of entrants into higher education in a number of countries. To some extent, such a development could be associated with the size in the total supply of graduates and with the individual returns they were getting. Hence, it could be expected that those countries with more extensive post-secondary education systems should, in theory at least, record the most marked decelerations in the growth of student numbers. But this is not borne out by the data and the situation seems to be more complex. Simple regressions relating the growth in enrolment ratios over the last decade to the initial level of enrolments, the growth in GDP and demographic developments over the period have little explanatory power. Disparities in enrolment ratios may just as much a function of the wide differences between countries in the socio-cultural role of education and in the extent to which the education system is viewed as a system of social advancement, a vehicle for research, and a means for individual development. All these elements probably underline the recent decline in enrolments in higher education experienced both in Sweden and the United Kingdom, where enrolment ratios were approximately 15 to 25 per cent, and in the United States and Canada where enrolment ratios vary between 35 and 45 per cent.

1. No change from present levels was assumed for Japan and the United States where enrolment ratios are already above 97.5 per cent.

2. This may, however, tend to overstate enrolment ratios in those countries which place greater reliance on industrial apprenticeship schemes.

Hence "mechanical" projections of enrolment ratios may not be appropriate. The more sophisticated methods of forecasting used in several individual countries have also had great difficulties in estimating enrolments even a few years ahead. As an alternative, all enrolment ratios were raised by an arbitrary figure of 20 per cent, with a ceiling of 35 per cent.[1] Clearly this approach is a simplification entailing possible errors for individual countries who may wish to modify the results in the light of their own more recent forecasts and expectations. The scanty information available for a number of countries suggests that, in most cases, the growth rates of enrolments projected over the 1970-1980 (or sometimes 1975-1985) time span are higher than the 20 per cent increase assumed here. But, not infrequently, such forecasts are somewhat out of date and have failed to take into account the more recent slowdown in the number of new entrants into higher education.

The results of the projections for both levels of education show that, in real terms, only a small increase in overall resources would be required to increase enrolment ratios substantially (of the order of ½ per cent of GDP), and this is more than offset by demographic developments. The situation varies considerably from lower to higher education. This reflects, of course, differences in the assumptions employed as well as the different rates of growth of the relevant population groups already built into Assumption A. For the lower levels of education, Assumption B implies a small decline in expenditure (though some increase with respect to Assumption A). Only Italy would have to devote some ¾ of a per cent more of GDP to bring up enrolment ratios. A very small increase is implicit for higher education. The situation varies widely between countries depending upon initial starting positions. At the lower end of the spectrum, is the United States, where the existing high enrolment ratios imply no expansion. In contrast, in Britain and Germany, relatively high costs per student and a sharp rise in student numbers lead to increases of 40 and 50 per cent respectively. In the Netherlands, where costs per student are also relatively high, the projections indicate a more moderate increase reflecting the slower growth of the population of university age.

iii) *Assumption C*

The hypothesis built into variant C was that of some convergence between countries in the costs per student relative to GDP per capita. In other words, it is assumed that, in those countries in which unit costs have reached relatively high levels, the growth in real resources per student would moderate. But for those at somewhat lower levels, there may be some international "demonstration effect" which would lead governments to expand inputs at more rapid rates than in the past. The growing inter-

1. No change was made for North America which in the early 1970s was already above 35 per cent.

national integration amongst all Member countries, attempts to co-ordinate curriculums and teaching methods, international exchanges of experience etc., are all forces which may lead in this direction.[1] The slower growth of students expected in the future could free resources which had formerly been fully tied up in just keeping abreast of the rapid expansion in student numbers. Thus, under Assumption C, the projections are adjusted by changing the cost per student in relation to GDP per head under the hypothesis that, by 1985, the difference between individual countries and "best practice" levels would be reduced by half. "Best practice" levels were defined arbitrarily as those levels reached in the two or three countries with the highest "cost ratios". For primary and secondary education the target cost ratio was put at 0.250 of GDP per capita (or roughly the average level already reached by the three Scandinavian countries). For higher education "best practice" was put at the same level as GDP per capita (i.e. a "cost ratio" of unity) roughly in line with what had been achieved in the early 1970s in Germany, Switzerland and the United Kingdom.

Overall, such a projection implies an increase of not quite 1 per cent of GDP (of which ½ per cent for the lower levels of education and 0.3 per cent for higher education). At the primary and secondary level, increases are substantial in Australia, Italy, Japan and France. In contrast, North America, Belgium and Finland could still record declines in expenditure since not even the assumptions implied in Variant C are sufficient to offset the impact of demographic changes. At the higher level, further increases in expenditure appear for all countries (except for Japan where, however, no change has been assumed in the respective weights of the public and private sectors). The projected overall increase to 1985 is similar to the one already recorded between 1963 and the early 1970s with, however, this time the greatest contributions coming not from enrolment changes but from real input increases. The plausibility of this assumption is, of course, open to great doubt. On the one hand, it could be argued that an increase in "cost ratios" may occur in reaction to the sharp fall which took place in the preceding decade and which may have led to an unacceptable deterioration in standards. Indeed, the average "cost ratio" for the sample of countries here covered would, under Assumption C, lie in 1985 at 85 per cent of GDP per capita, not far from the 1963 67 per cent level. On the other hand, however, the overall projections may appear high, notably in the light of recent trends in enrolment in higher education.

1. As was said in a previous OECD document devoted to trends in expenditure on education: "The authorities responsible for educational policy, as well as public opinion, are taking a growing interest in international comparisons between educational systems, especially as regards the percentage of national resources (or public expenditure) devoted to education. This attitude reflects a spreading anxiety to define national policies for educational expansion in relation to the enrolment levels attained in the other countries and the educational reforms and developments which are carried out in them". (*Conference on Policies for Educational Growth*, Background Study No. 2, STP (70)7, p. 2). Admittedly, however, not much statistical evidence on convergence can be mustered for the past decade.

iv) *Relative Prices*

So far, projections have been made in "real" terms and no account has been taken of the rise in relative prices, which could be considered one of the elements underlying growth beyond the discretionary power of governments. An extrapolation of past trends could add substantially to the figures so far shown in Tables 13 and 14, though again results would differ quite markedly in line with the developments in the 1960s already mentioned in Chapter 1.

Table 14. PROJECTION OF EXPENDITURE ON HIGHER EDUCATION
Percentage shares of "trend" GDP

	Actual early 1970s[1]	Hypothetical changes to 1985 under :		
		Variant A	Variant B	Variant C
Australia	0.94	-0.05	0.13	0.47
Austria	0.58	-0.03	0.08	0.32
Belgium	0.70	0.03	0.18	0.55
Canada	1.44	0.10	0.10	0.64
Finland	0.64	-0.19	-0.10	0.19
France	0.44	-0.03	0.06	0.79
Germany	0.85	0.23	0.45	0.50
Italy	0.48	0.05	0.25	0.57
Japan	0.34	-0.09	-0.04	-0.01
Netherlands	1.43	-0.04	0.23	0.31
Norway	0.69	-0.05	0.08	0.42
Sweden	1.13	-0.04	0.18	0.41
Switzerland	0.87	0.02	0.20	0.20
United Kingdom	0.98	0.14	0.37	0.37
United States	1.46	-0.16	-0.16	0.34
Dispersion[2]	0.35	0.10	0.15	0.19
Average[3]	0.79[4]	–	0.13	0.40

1. For exact years, see Table 4.
2. Measured by standard deviation.
3. Arithmetic mean.
4. Geometric mean

Thus, for France and Norway, which had relatively favourable price trends in the past, future increases in money expenditures on this account would be very small. The opposite would be the case for Austria, Canada, Sweden and, especially, the Netherlands. But great care must be taken when looking at such figures (which are shown in summary form in Table 15 below). The margins of error involved are very large, and there is no assurance that past trends will continue. Indeed, the very large number of graduates from higher levels of education, coupled with some deceleration in the growth of demand, may well exert downward pressures on teachers' salaries over the coming decade.

Table 15. PUBLIC EXPENDITURE ON EDUCATION IN 1985
Percentage shares of "trend" GDP

	Actual early 1970s[1]		Effect of relative-price shifts[2]	Hypothetical changes to 1985 under variants:		
	Items included in projection	Total		A	B	C
Australia	3.6	4.5	1.29	0.15	0.55	1.87
Austria	3.9	5.2	2.26	-0.34	-0.12	0.78
Belgium	4.9	5.4	1.24	-0.65	-0.48	0.08
Canada	6.5	7.7	2.37	-1.29	-1.11	0.07
Finland	5.5	6.3	1.37	-1.20	-1.11	-0.50
France	3.1	4.5	0.38	-0.13	–	1.66
Germany	3.0	4.2	1.45	-0.17	0.17	0.56
Italy	3.5	4.0	1.09	-0.01	0.96	1.88
Japan	2.6	3.6	1.56	-0.04	0.01	0.97
Netherlands	5.3	7.6	4.28	-0.57	0.19	0.80
Norway	4.5	6.0	0.35	–	0.22	0.91
Sweden	5.4	7.1	2.09	-0.07	0.26	0.49
Switzerland	3.6	4.9	0.51	-0.34	0.35	1.04
United Kingdom	3.8	5.6	0.56	-0.05	0.45	1.27
United States	5.1	6.0	1.10	-1.01	-1.01	0.21
Dispersion[3]	1.1	1.2	0.98	0.45	0.60	0.66
Average[4]	4.2[5]	5.4[5]	1.46	-0.38	-0.04	0.81

1. For exact years see Table 4.
2. This effect has been measured on the early 1970s base level (excluding items not covered in the projection). It would be somewhat higher if it were applied to, for instance, total expenditure or to the 1985 outcome under assumption C.
3. Measured by standard deviation.
4. Arithmetic mean.
5. Geometric mean.

1985 EXPENDITURES

The various assumptions so far discussed are summarised in Table 15. As can be seen, no assumptions have been made for elements in education expenditure other than the current costs incurred in primary, secondary and higher education. The information available on such items was not sufficient to allow even hypothetical projections. But the existence of other expenditures (which are roughly of the order of 1¼ per cent of GDP and 25 per cent of total education budgets) must be borne in mind. It is quite possible that capital expenditure, for instance, may increase in the future not only to accommodate the rising number of students expected but also to make good some of the lags likely to have been accumulated over the past decade. In terms of current expenditure, for the area as a whole, the changes in real GDP shares shown vary from -½ per cent under Assumption A to an increase of nearly 1 per cent under Assumption C. Australia, Italy and France are the three countries which could see expenditures rising

by significantly more than that (not far from 2 per cent of GDP) — the former two on account of low enrolment ratios, the latter because of well below average unit costs per student. At the other end of the spectrum are North America and Sweden, the richest countries in the sample, as well as Belgium and Finland, whose education budgets might rise only little relative to GDP, or even fall (in the case of Finland). Pressure for increases is likely to be about equally shared between the primary and secondary levels of education (which had been responsible for nearly two thirds of the expansion of the past decade), and the higher level.

The final outcome could, however, be considerably higher if price changes are brought into the picture. If, indeed, the relation between overall price movements and the education (or public consumption) deflator remains the same as in the past, expenditure could, on average, rise by 2½ per cent of GDP. In a number of cases the other projected changes look almost insignificant if compared to the likely impact of price developments. However, there is some reason to believe that the relative salaries of teachers will not increase in the coming decade at as fast a rate as in the 1960s. This suggests that the relative cost of education may not grow as rapidly as in the recent past.

An alternative way of forecasting future public expenditure on education would be to extrapolate past relations between such expenditures and total output. This approach is clearly mechanistic but is presented, for purely illustrative purposes, in Table 16. Use was made for this purpose of the per capita, constant price, "income" elasticities shown in Table 2 and of some very rough projections of GDP.[1] The results show that in real terms expenditure as a share of GDP would rise on average by a quarter of a per cent if past trends were to continue, rather than by ¾ per cent as implied in Table 15. The increase would be particularly marked in Canada which has the highest share of GDP at present, while Japan, a country with a low share, would record a relatively sharp fall. Some other figures may not look as implausible but it would nonetheless seem that, overall, the elasticity method can give rather misleading results.

Clearly, national forecasts are a much better source for narrowing the range of possibilities shown in Table 15. Unfortunately, official medium-run education expenditure plans are not available in a majority of cases. Some idea of how realistic (or unrealistic) the arbitrary assumptions used so far are can be obtained from the recent published official British and German projections[2] as well as from some forecasts submitted to the OECD Secretariat by the Belgian Planning Office. For the United Kingdom, the latest White Paper on public expenditure proposes cuts after 1976/77 which will cause an absolute decline in expenditure and could reduce education's share of GDP by three-quarters of a percentage point at constant prices; relative

1. Both population and GDP growth rates come from OECD, *Expenditure Trends in OECD Countries, 1960-1980*. Until 1975, 1970-75 growth rates were applied; from 1975 to 1985 use was made of the 1975-1980 period projections extrapolated for a further 5 years.

2. See *Bildungsgesamtplan*, Bonn 1974, and *Public Expenditure to 1979-80*, HMSO 1976.

price movements would keep the reduction in current prices to about half a percentage point by 1979/80.[1] The German plan extends to 1985 and foresees that, in the 15 years from 1970, the share in GNP could rise by perhaps ½ per cent in real terms and 2½ per cent in current price terms (from 4.3 in 1970 to 4.7 and 6.8 per cent respectively in 1985, under the "medium" assumption for GNP growth). Finally, the Belgian figures indicate rough constancy for the education share in GNP between 1970 and 1980 in real terms, but an increase of roughly 1 per cent in current prices. In two of these three cases, at least, it does not appear that the figures shown in Table 15 are unreasonable.

Table 16. EXTRAPOLATION TO 1985 OF PUBLIC EXPENDITURE ON EDUCATION

Percentage shares in "trend" GDP

	Actual early 1970s[1]	Hypothetical 1985[2] (at constant prices)
Australia	4.5	5.0
Austria	5.2	5.3
Belgium	5.4	5.6
Canada	7.7	9.8
Finland	6.3	5.9
France	4.5	4.8
Germany	4.2	4.6
Italy	4.0	4.3
Japan	3.6	2.7
Netherlands	7.6	7.8
Norway	6.0	6.4
Sweden	7.1	8.1
Switzerland	4.9	5.4
United Kingdom	5.6	6.1
United States	6.0	6.4
Dispersion[3]	1.2	1.7
Average[4]	5.4	5.6

1. For exact years see Table 4.
2. Based on "income" elasticity of per capita education expenditure to per capita GDP in constant prices for the 1963–early 1970 period, as shown in Table 2.
3. Measured by standard deviation.
4. Geometric mean.

A final consideration which is relevant in this context is the effect of higher enrolment ratios on output growth. Assumption B implies that by 1985 the proportion of the 15–22 years age group outside the work force will have grown from its present level. *Ceteris paribus* this withdrawal could

1. Compared to the hypothetical projections presented here, the United Kingdom expects a slower increase in participation rates in higher education, and some fall in unit costs.

lead to a reduction in the size of the 1985 labour force of roughly 2 per cent. The resulting shortfall in GDP will depend on the possibilities of capital-labour substitution and on the average productivity levels of younger workers. Assuming, for simplicity's sake, a 0.66 coefficient for labour, as often found in standard Cobb-Douglas production functions, the 1985 level of output could be between 1 and 1½ per cent lower than it would otherwise have been. This overall average hides some significant differences, depending on initial year enrolment ratios. Thus North America's GDP would remain roughly unchanged, but output in the Netherlands, Belgium and Italy could be reduced by margins varying between 1½ and 2 per cent. These "costs", in terms of foregone output, should be considered in conjunction with the "costs", in terms of increased expenditure, resulting from more ambitious educational policies. It should be noted, however, that such figures may overestimate the likely reduction in GDP since the increased levels of education obtained through higher enrolments and inputs per student could enhance the rate of economic growth.

Chapter 4

ADDITIONAL EDUCATIONAL PROGRAMMES

The previous chapter has looked at the growth of the traditional education system to 1985. The following paragraphs will review some of the demands which may be placed on governments to increase expenditures on students who are outside what is normally considered as being the school age. A number of new programmes or policies which will make the education system more effective have received prominence in recent years. Some of these involve changes of curriculum within the existing structures and do not have serious financial implications. Such programmes, which are mainly concerned with pedagogical questions, must be left to experts in these areas even though the issues they raise may have an important bearing on the impact of education on the goal areas laid out in Chapter 2. The emphasis in this section is on those programmes which could increase education budgets considerably.

The programmes which will be discussed are:

i) Pre-school education;

ii) Compensatory education;

iii) Recurrent education.

These programmes are not new. Pre-school education has a long history and, in some countries, the relevant enrolment ratios have been rising rapidly. Compensatory education as a separate programme has primarily been experimented within the United States and the United Kingdom, but "positive discrimination" in favour of handicapped or disadvantaged children has been made within the context of the formal education systems in most countries without being specifically designated as such. "Recurrent education" has more recently been proposed as a framework within which higher education of all types can be organised and the future growth of enrolment streamlined. In some European countries expansion in adult education is already underway, as for example in the "formation permanente" programmes in France.

Two main aspects of these various programmes will be looked at:

i) A brief description and a discussion of the objectives they are expected to achieve;

ii) Some consideration of the cost and financing problems they raise.

The descriptions are provided because these programmes are not always well-known, but it should be noted that they are by necessity general and that not all governments would subscribe to the objectives of the schemes as presented here. As for the discussion on costs, it will be unable to give any accurate idea of the expenditures which might be entailed by these programmes were governments prepared to embark on them. Much would depend upon their content and upon the particular approaches followed which could well vary between countries in response to different problems. All that can be done in the present context, and without extensive further research into existing programmes, is to suggest the kinds of considerations that are likely to be important and to give some orders of magnitude of possible costs. It should not be forgotten, moreover, that many education programmes of this nature are already undertaken in the private sector in response to private demand. Thus, government expansion in these areas could simply mean a shift in control and financing rather than an additional resource cost to the economy.

PRE-SCHOOL EDUCATION

Countries have varied greatly in the extent and type of pre-school education. For example, in Belgium, enrolment ratios for those aged 3 to 5 have been between 90 and 95 per cent while, in Norway, there is almost no pre-school education at all. In many countries the private sector has supplemented the State's role in providing this service as, for instance, in the case of the nursery school system in the United Kingdom. In the past, a major role of these schools was social rather than educational. The emphasis has recently begun to change and greater importance has been given to education objectives. These are linked with compensatory education and will be discussed in the next section. Nevertheless, there is still a growing custodial role to be played as women take a more active role in society outside the home. In particular, more extensive nursery and pre-school centres will do much to improve the situation for working mothers.

Pre-school education was not considered in Chapter I. But, not unlike the more traditional forms of education, it also saw a relatively rapid expansion over the last decade. Increases in enrolment numbers for the countries for which data could be collected centred around 5 to 6 per cent per annum between 1960 and 1970. Some countries (e.g. Canada, Japan, Portugal and Sweden) increased their enrolment rates a good deal faster (more than 8 per cent per annum), but these developments may, in part, have reflected low initial levels. Scattered statistical evidence suggests that these increases were paralleled by some rise in the share of expenditures on pre-school education in GDP and by some declines in pupil-teacher ratios. Expansion in this field has been motivated by social as well as educational considerations. Indeed, the former have often been the more important, and this explains why pre-primary education is sometimes in the hands of welfare, rather than education ministries. The growing eman-

cipation and labour market participation of married women have also been driving forces in the expansion of such facilities. A recent additional impetus in this area has been the rising importance attached to early education for children whose learning processes are likely to be impaired by their family background.

These considerations, as well as the more general pressures for freeing young mothers, suggest that pre-school education may be the most likely area of expansion for many governments.[1] The cost of pre-primary education will depend upon the proportion of the child population covered and on the objectives pursued. Should the role be mainly custodial, costs will be less, as larger classes are possible. But if "compensation" or "positive discrimination" in favour of handicapped groups is considered important, class sizes will probably have to be decreased to raise the amount of individual attention. It is not easy to foresee the claim on resources that may be involved in a sizeable expansion in this area. For the few countries for which some data are available it appears that costs per pupil in pre-primary education are slightly lower than unit costs in primary schools. Enrolment ratios vary between negligible figures and the near 90 per cent ratios recorded in the Benelux and France. To provide some rough order of magnitude it was assumed that over the coming decade countries would:

i) Bring enrolment ratios up very substantially to either 75 or 90 per cent of the children in the two years before compulsory education commences;

ii) Increase unit costs per pupil only marginally and bring them, in terms of GDP per capita, to equality with the present unit costs of primary school children.[2]

It is clear that the choice of both assumptions is arbitrary, but their combination may suggest a rough order of magnitude of possible future costs within which countries may then choose to alter either enrolment ratios or inputs per pupil.

The results suggest that the overall cost is not negligible but should not be unmanageable. For the 15 countries sample here covered, the share in GDP of pre-primary education expenditure could go up by roughly 0.2 per cent, assuming 90 per cent enrolment ratios. But for some countries costs could rise more sharply. Thus, in Sweden, the GDP share could increase by 0.3 per cent, in Canada and Finland by 0.4 per cent and in Norway by as much as 0.6 per cent. Conversely, a lower enrolment ratio or a more extensive use of part-time provisions could bring down these various percentages. To these estimates should of course be added (as already pointed out in the previous chapter) the impact of relative price changes.

1. See, for instance, *Educational Priority, Problems and Policies*, HMSO 1972, Vol. 1, p. 180.

2. This hypothesis extends to pre-primary education the negative correlation between the size of inputs and the number of beneficiaries observed for other forms of education in the past.

COMPENSATORY EDUCATION

Compensatory education is difficult to define because it covers a wide range of programmes.[1] These have most often been associated with pre-school children but measures have also been introduced at other levels of education. The primary objective has been to improve the academic performance of children from underprivileged groups, thereby raising their chances of social and economic advancement. Underlying this objective was a broadening in the concept of educational equality. In the hope that the education system could be an instrument to break the "cycle of poverty", the more traditional view of equality of entrance has over time been extended to include "equality of result". In other words, it has been felt that the education system should give not only equal access to the school system but should also attempt to offset the negative effects on academic achievement of a poor home and social environment, thereby giving the child equal chances on leaving the education system.

A wide variety of approaches has been employed but little systematic attempt has so far been made to test their effectiveness. A particularly important effort was made in the United States starting in the first half of the 1960s. While there had been a number of prior schemes, the first consistent attempt to evaluate the efficiency of these policies came with the "Head Start" programme which gave pre-school training to a large number of underprivileged children. Other projects followed to test the effects of different curricular approaches, of further help once students entered the school system, and of student support through family contacts and changes in parental attitudes towards education. These latter initiatives have been paralleled by efforts to open up the school to the community to make it more responsive to local needs and aspirations. In the United Kingdom, the Educational Priority Areas have been given preference in terms of expansion in the numbers of teachers. A number of university-based research projects of a limited nature are underway in some Continental European countries as well as schemes designed to help migrant workers.

It is difficult to evaluate the impact of such programmes. In the United States, present experiments have not had a noticeable lasting impact on student performance. Initial improvements in disadvantaged students soon disappeared when the special support was removed.[2] This suggests that, in its present form at least, compensatory education may not be sufficient to offset the impact of the environment outside the school or other disadvantages. At the same time, however, it is necessary to recall that compensatory education is a relatively new field for which it is too early to make

1. Compensatory education could possibly be taken to include all teaching and other help which a student receives over and beyond the "average". If viewed in this way, compensatory education could cover a large amount of educational activities, e.g.: keeping class sizes in rural areas small, the use of psychologists to help emotionally disturbed children and so on.

2. See OECD CERI, *Strategies of Compensation*, 1971.

a complete evaluation and that a number of programmes have failed because of lack of finance and of proper organisation. Indeed, in the United Kingdom, the results of the Educational Priority Areas have indicated that the academic improvement acquired at pre-primary and primary schools tends to be maintained for longer periods than in the United States.

Data on the costs of compensatory education are very scanty. In any case, it is often difficult to distinguish where "normal" schooling ends and compensatory education begins, particularly in pre-primary and primary forms of education. The existing British or American examples are not very significant because they were particular, localised projects. Estimates for the United States show that total expenditures which could be broadly classified as compensatory[1] equalled about 3.5 per cent of total current spending on education (or 0.2 per cent of GDP). These figures probably underestimate the levels of expenditure, since many programmes are carried out at the local level. In the United Kingdom, the Plowden Committee suggested, in 1966, that an initial programme covering the 10 per cent most disadvantaged children in England and Wales would add £11 million to the current spending of "maintained" (i.e. publicly controlled) primary schools (½ per cent of 1971 total current education expenditure).

Given the very partial nature of these figures, it would be rash to make any estimates of how future expenditures could evolve in this field. The growing doubts as to the extent to which compensatory programmes can have an effect without a broader approach which will give continued support and, at the same time, try to influence the underlying socio-economic conditions and cultural deprivation which influence the academic achievement of children from poorer families, may in any case stop countries from pursuing special schemes. The extent to which compensatory education is, in many instances, pursued within the traditional educational system suggests that countries might wish to concentrate their efforts on pre-primary and primary education. If this suggestion were accepted, the expenditure projections presented in the previous section and in Chapter 3 might need upward revisions.

ADULT AND RECURRENT EDUCATION

The main effect of the expansion of the education system in the recent past has been to increase the number of years that the child spends in the education system. In the first instance, this has led to an expansion at the upper secondary level and, subsequently, in higher education. More recently, however, there has been growing emphasis on methods of providing the adult working population with greater possibilities for education and re-education. As was said in a recent OECD report: "The solution does not

1. Amongst other, the "Head Start" programme, Equal Opportunity Grants, Special Programmes for the Disadvantaged etc.

lie alone in provision of ever-lengthening full-time education for all. Policy in all countries must provide better opportunities for alternating and mixing education and training with work.[1] To be sure, there are already a number of ways by which individuals can undertake further studies. Night classes of various kinds, Germany's "Volkshochschulen" or such institutions as the "Open University" in the United Kingdom, provide considerable possibilities of an information-culture type. At another level, industry supplies ext "on-the-job" as well as other training in order to obtain skills no ays provided by the educational system and there are many countries with government programmes for retraining not only the unemployed but also active members of the labour force.

It can be expected that pressures to expand the education system in this area will continue for a number of reasons. First, a growing belief that those who have dropped out of the education system merit a second chance and the awareness of the potential gains to society have increased the emphasis on equal educational opportunity. Second, the rapidity of technological change and the growing complexity of our society imply a need for periodic retraining not only for those who wish to improve their knowledge, but also for those who find that their skills are no longer in demand and wish to obtain new qualifications.

However, a major problem in this context has been the lack of a coherent framework within which expenditures in this area can be organised and further expansion made. One suggested framework is "recurrent education" which provides a comprehensive education strategy involving, in addition to a consolidation of efforts in the area of adult education, some rethinking of the present education system.[2] The essential feature of this approach is to spread education over the lifespan of the individual in a recurring way rather than to concentrate it almost entirely on the earlier years. Education would be alternated with other forms of activity bringing the student into closer contact with the "real" world. The proponents of this approach maintain that it would resolve a number of the present problems of education. Students experiencing "school fatigue" would be encouraged to obtain experience in the "real" world before re-entry into the school system at a later date. It is also suggested that such an approach would make the education system more responsive to the needs of the economy for certain qualifications or skills, first by bringing students into closer contact with the labour market and second by facilitating upgrading or retraining where necessary.

The impact of adult education, particularly when taken in the context of recurrent education, is extremely difficult to assess since it has not yet been tried in any country on a significant scale for a sufficiently long period.[3] It can be argued that it should lead to some social gains, quite

1. OECD, *Education and Working Life in Modern Society*, 1975, p. 8.

2. See OECD CERI, *Recurrent Education : Trends and Issues*, 1975.

3. To be sure, there have been schemes for retraining the unemployed in many countries, but these have tended to be on a smaller scale than the programmes here envisaged.

apart from the obvious private benefits which it might provide. In terms of allocation of resources and higher growth, recurrent education would match the social need for a more efficient labour market by making the educational system better able to supply the mix of skills demanded by the economy. It may, moreover, affect socio-economic equality. Increased educational possibilities for those who have missed out in the early years of education can probably be considered equitable.[1] The idea of a two year entitlement to higher education at any age for everyone after the end of compulsory schooling, would mean a distribution of education towards those in older age groups who have not benefitted personally from the recent expansion, thus giving a more equitable spread of public resources in one generation.

Estimates of the cost of adult education are not available for the past. Any projection must take into account the existence of a number of private programmes. Hence new plans in this field could be met, to some extent, by a reorganisation of present resources in post-secondary education rather than by increases in expenditure. For efforts going beyond this, much would depend on how new programmes were to be financed. For example, the "formation permanente" in France is paid by firms who are obliged by law to set aside a certain proportion of their wage bill for this purpose. Estimates are further complicated by the extent of income support required for individuals undertaking retraining. Nevertheless, some orders of magnitude can be provided based on a number of simplified hypotheses. If it were assumed, for instance, that each worker had the right to a one year period of adult education during his active life span and was paid his full salary, the expenditures arising from the programme (including teaching costs), would lie between 1½ and 2 per cent of GDP.[2] However, there are factors which would tend to reduce the cost. It is unlikely that all individuals would undertake study or that a potential student could expect to receive his average wage during the period of retraining. In addition, there could be some reduction in present levels of attendance at higher education institutions amongst younger age groups. Hence, even assuming a concerted effort in this field on the part of governments, a more realistic assumption might put possible costs closer to 1 per cent of GDP.

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1. However, it is interesting to note that an initial survey of the effects of the French law on professional training (1971) indicated that, in the first year at least, the number of technicians and "cadres" undertaking education was four times larger than that of workers.

2. This very rough result was obtained in the following way. The average working life of a person was put at 45 years and it was assumed that within this period every person would take a one year leave for higher education. If the full average wage was paid (and there was no bunching of leave periods at particular age groups), the overall cost would amount to 1/45th of the wage bill. Since wages and salaries are generally around 60 or 70 per cent of GDP, the cost could amount to 1½ per cent of GDP. Adding to this one third for instruction costs (a rough estimate based on an average of the figures shown in G. Psacharopoulos, *Returns to Education, An International Comparison*, London 1973, Appendix D), gives almost 2 per cent of GDP. The instruction costs estimate is roughly equivalent to a 0.50 "cost ratio", i.e. to a level of inputs per student somewhat below the present average inputs in higher education (see Table 6).

A SUMMARY

The three programmes which have just been discussed represent only some of the new alternatives which may be open to countries in the education field. Other schemes have been advocated which could also imply increases in spending. But, in terms of expenditure, these are probably the most important additions to formal education which might be expected over the coming decade. Their macro-economic costs are summarised below (in terms of increases in GDP shares in 1985):

Pre-primary education	0.1–0.3
Recurrent education	0.5–1.0
Compensatory education	n.a. (but probably some upward effects on costs in the formal education system)

It will easily be seen that the increasing claims on resources which could be forthcoming (from ½ to 1½ per cent of GDP) are equal to or greater than those implicit in the hypothetical projections for the formal education system contained in the preceding chapter. But it is also clear that these figures are over-estimated for a number of reasons:

i) For both pre-primary and recurrent education, they imply very high "enrolment" ratios (near-complete coverage of young children and a one year period of training for a large proportion of the labour force). It is highly unlikely that most countries will go so far in one, let alone both, these directions;

ii) They do not allow for the existence of widespread private systems in both fields; public involvement may increase governments' financing problems but would not imply as large a cost in terms of resource allocation;

iii) In some ways, they are alternatives to the formal educational system, notably in higher education, and could not, therefore, be added without prior adjustment to the projections presented in the previous chapter.

Hence more realistic estimates might be in the range of ½ per cent of GDP, with efforts perhaps concentrated on pre-primary schooling (the field in which "compensatory" effects might be most important), and more modest increases in adult education.

A more realistic projection would also include the opportunity costs of the programmes. These can hardly be quantified. But it should not be forgotten that recurrent education implies a loss of output to the economy. This loss is, of course, short-run. Over the longer-term it could be argued that output would lie above the level it would have reached without recurrent education. Pre-primary education, on the other hand, by freeing mothers for work, can provide an offset (provided the demand for labour

adapts to a larger supply of female workers). The final effects on output levels will depend on the respective productivities of the two labour forces and on the changes in their sizes, as well as on the initial level of unemployment. On balance, some shortfall in GDP would seem inevitable, at least for those countries which plan to extend considerably their programmes for adult education.

Chapter 5

SOME ISSUES FOR ECONOMIC POLICY

A very large number of issues can be considered in the field of education. But most of the problems which are raised are usually of a specialised nature and are of concern to the educationalist rather than to the economist. The general focus of this paper, as well as the main interests of Working Party No. 2, suggest that any discussion of policy issues should concentrate on the macro-economic expenditure flows. The hypothetical projections outlined in the previous two chapters will be taken as a starting point. It was shown there that, in view of a relatively more rapid rate of inflation and the requirements of additional programmes, the share of public education budgets in GDP was highly likely to increase over the coming decade. Such an increase may appear disturbing to policy makers who are already faced with growing demands for other public goods and services. The present chapter will try to see whether means exist which could limit the future burden on governments of rising demands for education. Two main topics will be discussed:

i) The savings which could be achieved by a more "efficient" use of present resources;

ii) The alternatives open in the financing field, notably for higher education.

It must be stressed that, in both these areas, little can be said of a positive nature; nearly all statements regarding the "efficiency" of the education system or the choice between the public and the private sectors are, in the end, value judgements and will depend on society's preferences. As a result, this report can do little more than pose a few alternatives in very general terms.

REDUCTIONS IN COSTS

The most obvious way in which economies could be achieved would be to reduce the present number of students. But this is unlikely to be politically and socially acceptable. Short of such a drastic and unrealistic alternative, more limited possibilities of savings can be explored in the

areas of unit costs per student and duration of study especially, in the latter case, in the field of higher education. Given the highly labour-intensive nature of education and the earlier estimates which showed that by far the largest rise in expenditure over the coming decade was likely to come from the impact of relative price changes, it is clear that the greatest potential gains could be derived from a reduction in this labour intensity which did not at the same time adversely affect the quality of teaching.

i) *Unit Costs*

A large part of the growth in average real costs per student can be accounted for by changes in teacher/student ratios which are in turn, influenced by teaching "loads",[1] the variety of courses, and class size. The general reduction in the length of the working week and the growing complexity of modern societies make it unlikely that any savings could be achieved by expecting teachers to work longer hours or by cutting down on the number of courses. Hence, reductions in costs could only be obtained by a reversal of the fairly widespread past trend towards smaller classes. Future developments in this area will respond to social and political pressures, but there are two aspects worth noting. On the one hand, research which has been carried out on the relative efficiency of smaller versus larger classes is unable to conclude that student performance is positively related to small group teaching.[2] On the other hand, economic growth is increasing the demand for specialised skills which require a fragmentation of the curriculum into narrower and more numerous subject disciplines. Similarly, the growing awareness of the needs for individual development, both in leisure and vocational activities may well require a greater degree of personalised instruction. Such trends will tend to demand more teaching staff rather than less, particularly at the lower levels of education.

If the scope for savings on labour inputs appears limited in view of the contrasting influences just mentioned, capital-labour substitution could provide an alternative. Over the period studied, some evidence suggests that the relation between capital and labour inputs has remained rather stable.[3] At present there seems to be no consensus on whether more capital-intensive techniques (like language laboratories, audio-visual systems, television) are an improvement over traditional teaching methods. From an economic standpoint, and given the large overhead expenditures involved, it seems that they would only become financially viable at very large scales of operation, larger than those presently achieved, by most schools. Consequently, such techniques are probably better suited to higher levels of education than to primary and secondary courses, or to "mass education"

1. The number of hours taught by each teacher.
2. See OECD/CERI, "Class Size as a Factor of Pupil Performance: A Policy Analysis", *mimeo*. 1973.
3. Mary Garin-Painter, "Public Expenditure Trends", *OECD Economic Outlook – Occasional Studies*, July 1970.

systems such as the "Open University" in the United Kingdom. In view of their limited scope, it is unlikely that the savings which could be obtained would be very substantial.

ii) *Duration of Study*

There is little inter-country variation in the length of compulsory schooling (and differences have narrowed somewhat over time), but there is wide variety in the length of university studies which go from three years in some countries to seven years in the Netherlands.[1] The scope for savings here would seem to be limited to countries with long degree courses. A very simplified estimate, using the data of Table 6 above, shows that a reduction from, say, four to three years in the length of higher education (equivalent to a 25 per cent fall in the demographic ratio), could, on average, reduce spending by almost a ½ per cent of GDP. This is a non-negligible figure, but would seem to be an overestimate. Quite apart from the question of whether three years are preferable to four from an educational standpoint, it is clear that an across-the-board reduction is not possible. In some faculties longer studies are inevitable. Moreover, overhead costs are unlikely to be reduced proportionately to the number of students, and any savings can only accrue through time. But even if the potential economies are likely to be much smaller than suggested by the hypothetical example here used, there would seem to be scope, at least in some fields, to reduce the length of university studies (or to pursue further experiments with shorter degree courses which now exist in parallel with the longer courses in a number of countries). Some further, though probably much smaller, savings could be achieved by lengthening the duration of the university year which often includes as many as 20 weeks vacation. Indeed, curtailing the latter could provide a partial offset to the shortening of the number of years of study.

ALTERNATIVE FINANCING SCHEMES

Such considerations show that there is some scope for action. Nonetheless, the overall savings on labour and capital inputs which can be achieved, assuming that no direct measures were taken to restrict access to education, would seem to be relatively limited. Some attention may therefore have to be given to ways of financing at least part of the expected growth in expenditures without recourse to the public budget. This issue raises the major problem of the respective roles of the private and state sectors in education. The tentative projections made so far have assumed that there would be no change in the share of private education in the total, but this will of course not be the case should countries allow private institutions to grow faster. Such a course of action would not

1. Recently plans have been proposed to reduce this by an average of two years.

change the magnitude of the resource allocation problem which has to be met in the future, but could ease the financing difficulties of the public sector.

Data on the relative shares in expenditure of the private and public sectors are not easily available. But it would seem that the proportion of private expenditure in total spending tends to rise as the level of education increases. Thus, while countries usually feel that the lower levels of education require almost total public support (even up to the provision of books and materials in some systems), most governments implicitly require more private spending at university levels.[1] Such a situation is unlikely to change. Free public, or subsidised, private education will go on being provided up to the end of compulsory schooling and probably to the end of upper secondary school. Questions of alternative forms of finance can, therefore, be restricted to higher education.

Public support for higher education takes two main forms: direct subsidies to institutions (which allow the levying of very low fees), and/or student maintenance in the form of grants or loans. Countries vary in their use of these two instruments, with the emphasis on loans apparently widespread in Scandinavia, subsidies important in several Continental EEC Member countries and grants representing a significant share of British expenditure. It will be assumed that countries will not wish to reduce their direct or indirect help to students via grants or loans. Hence, the scope for budgetary savings can be discussed under two main headings:

i) A reduction in subsidies to universities and other institutions of higher education, accompanied, perhaps, by some increase in student help;

ii) A shift in the emphasis in student support from grants to loans.

The first alternative would increase the influence of market forces in higher education. Fees would have to be raised and students, even if helped to a larger extent, would make choices between different faculties and degree courses, to some extent depending on their costs. This has been advocated by some in order to make higher education institutions more "consumer-oriented". But there are two important drawbacks to such policies. Firstly, fees which are nearer to full costs would regulate entry into high cost subjects and would increase inequality of access to universities even with higher levels of student aid. Thus, the system would be even more socially selective than at present. Secondly, cost pricing raises a number of difficult problems. Prices should reflect social costs, teachers' salaries in various faculties may have to respond to demand and supply forces rather than to administrative regulations; the costs of teaching and research should be separated and properly assessed etc. It is unlikely that countries will want to relinquish their present control over university education and research activities in favour of improved resource allocation, in

1. Not to speak of the much larger private foregone earnings for students of that age.

order to achieve savings in expenditures, which will in any case be at least partly offset by increased student maintenance costs.

The alternative and much discussed avenue for savings has been the proposal to shift the emphasis in the nature of student support. Scholarships and other forms of direct help, which have not been explicitly considered in the earlier analysis of past and future growth in expenditures, represent a sizeable share of higher education budgets in a number of countries (roughly of the order of 10 to 15 per cent). Proponents of economies in this field have usually argued that a loan system should be substituted for the payment of direct grants or even for subsidies to higher institutions. Such an approach may not only save on costs but could also limit some of the regressive influences of the present system of financing (at least in those countries which do not rely on means-tested grants to students). It is increasingly held that, since the proportion of members of the upper income groups which enters higher education is greater than that of the lower income groups, it is the richer members of society who derive most benefit from government subsidies. Secondly, and more generally, insofar as graduates are likely to have higher earnings over their lifetime than non-graduates, large subsidies to higher education involve a transfer of income to those who will generally be better off.

These various reasons have stimulated interest in systems which provide loans to students. By this means, it is argued, students from poorer backgrounds will still be able to pursue higher education, but will refund to the community some of the increased earnings that they will normally obtain as a result. Further reasons for advocating such a change are that it might: (*i*) induce in students a more responsible attitude to their studies; (*ii*) discourage those students who are unlikely to benefit from higher education from embarking on it – as long as it is virtually free – simply because they have not yet decided on any other post-school activity; and (*iii*) lead students to take more interest in the efficiency of higher education and the quality of the instruction they receive.

On the other hand, there have been many objections to such systems. Quite apart from the problems raised by full cost pricing already touched upon on page 66 above, loans could increase wastage rates by encouraging students to work to reduce their debt. They also raise numerous administrative problems such as exemption of women students who marry and drop out of the labour force, ways of coping with people who even after graduation are unable to find sufficiently remunerative work, or with graduates who emigrate, and so on. More important causes of disagreement concern the issue as to whether loan repayments should be a function of future income and the effects of loans on equality of opportunity. Whether a loan scheme will encourage students from poor families to enter higher education will depend upon the form and extent of the support system already existing, the terms of the loans and the coverage of risk. If no alternative system exists, then a loan system would clearly tend to improve access. In Scandinavia, where loan systems are in force on a large scale, there is no indication that lower income students (or women) are

discouraged from study. But it is unlikely that this issue will ever be clarified given the large number of other factors which affect the social composition of university entrants.

More relevant to the present discussion is the question whether the introduction or extension of such programmes could reduce the burden on public financing. This will depend on a large number of factors (e.g. the size of the interest rate subsidy, repayment terms, the number of students entitled to loans, previous amount of grants extended etc.). In countries in which student maintenance is largely assured by the state (e.g. in the United Kingdom), a shift to loans could eventually reduce government spending. But, in countries in which scholarships are much smaller, the financing needs of a loans scheme may have to cover not only university fees but also living costs during the period of study. In such cases, expenditure would presumably have to increase at first and it is only later, as students repaid their debts, that economies could be achieved. These, however, may not be very significant since loan schemes may not be fully self-financing, especially if the student population rises rapidly.[1] Evidence on the respective (economic) merits of loans versus grants is, unfortunately, scanty and it is difficult to provide hypothetical estimates given the very large number of alternative assumptions which can be made. This is clearly a field in which governments may wish to conduct more research.

The discussion so far has been unable to show that there is much scope for economies in the educational field. Some general statements have been made, applying almost exclusively to higher institutions, on the desirability of stretching the university year, while shortening the length of degree courses, or on the possible advantages of changing the forms of student support. But, even in such areas, the economies which can be made may not be very large and the results, in terms of "educational output", "efficiency" or "equality", uncertain. A more important measure through which savings could be achieved would be to halt the tendency for smaller classes or even increase pupil/teacher ratios. But it is likely that such moves would encounter greater resistance from teachers unions, parents, and students themselves, all of whom will probably continue to feel that closer contact with the teacher in small classes is preferable, even though there is little evidence that smaller classes improve academic performance. It would thus seem that though there is some scope for governments to hold back education costs in the future, it may be difficult to achieve significant economies.

1. Calculations for Denmark show that when fully developed, a loan scheme which involves some interest rate subsidy and a repayment period of 10 years, would generate from 20 to 70 per cent of its expenditure from repayments, depending on the subsidy's size and would never be self-liquidating. See M. Woodhall, *Student Loans: A Review of Experience in Scandinavia and Elsewhere*, London 1970, p. 125.

SUMMARY AND CONCLUSIONS

SUMMARY

This broad survey of public expenditure on education raises many more questions than it answers. Education, *per se*, has rightly attracted great research efforts in such fields as teaching methods, curriculum reforms or school achievement. But this has not been matched by an equivalent flow of studies on the economic implications of rapidly rising expenditures. This no doubt reflects both the formidable statistical problems, and the whole complex of intangible and difficult questions surrounding any assessment of the "output" of the educational system.

The work done preparing this report confirmed that the statistical material available for a cross-country comparative analysis of expenditure on education is extremely inadequate. Hence it has only been possible to provide a summary analysis of the factors underlying past trends and some very tentative suggestions as to possible future developments. Very broadly, and bearing in mind the data problems frequently mentioned in the body of this report, Chapter 1 shows that:

i) In the "average" (and non-existent) OECD country, public expenditure on education (close to 90 per cent of total expenditure in this field), accounted for some 4½ per cent of GDP in the early 1970s, and covered about 20 per cent of the population;

ii) Some 80 per cent of this expenditure, and over 90 per cent of the students, were concentrated at the primary and secondary level, the rest being accounted for by higher education;

iii) Higher education, though absorbing less resources than other levels, was much more expensive – the education of a university student costs some 3½ times more than the education of a school child.

These broad averages do not of course apply equally to all countries. Shares in GDP vary from peaks of 7 to 8 per cent in some of the richer Member countries like Canada, the Netherlands and Sweden to lows of 2 to 3 per cent in the Mediterranean area. Some international uniformity exists, however, at the primary and secondary level, where most enrolment ratios (students as a percentage of the relevant age group) reach 90 per cent levels and where costs per student cluster surprisingly closely around a figure of some 20 per cent of per capita GDP. But the diversity is much

greater for higher education. Enrolment ratios go from lows of 12 to 15 per cent in Austria, Switzerland and the United Kingdom, to peaks of 45 per cent in North America. And costs per student vary from 40 to 120 per cent of per capita GDP.

Between the early 1960s and the early 1970s, the share of expenditure in GDP rose, on average, by about 1 percentage point, and did not fall in any Member country. The main features were:

i) A relatively faster growth of prices in the educational sector which alone accounted for over 50 per cent of the increased share;

ii) A modest increase in expenditures on primary and secondary education reflecting both some increase in student numbers and a slight tendency for "real inputs" per student to rise faster than per capita GDP;

iii) A spectacular increase in higher education common to practically all countries, which reflected a near doubling in the number of students but was also accompanied by a 20 per cent fall, relative to the growth of GDP per capita, in real inputs per student.

In summary, the analysis contained in Chapter 1 indicates that, over the last decade, the buoyant expansion of education expenditure – a one third increase in its share in GDP – has been due to two main forces: a very sharp rise in numbers enrolled, especially in higher education, and a more rapid rate of price increase in this sector than in the rest of the economy.

The hypothetical projections of expenditures on the traditional educational system to 1985 put forward in Chapter 3, suggest that:

i) Demographic forces, which made little contribution, either way, to the trend in expenditures in the 1960s should be working so as to reduce future requirements by as much as ½ per cent of GDP;

ii) The effect of likely changes in enrolments and in costs per student is hard to assess, but, under a set of simplified and more or less plausible assumptions, neither may do much more than offset the negative impact of demographic trends;

iii) Though in real terms, therefore, the share of expenditures in GDP may not rise much above the early 1970s level, in current prices, a rise of perhaps 1½ percentage points in this share cannot be excluded given that the deflator for educational expenditures will almost certainly continue rising faster than the overall price level.

In addition to primary, secondary and higher education, as traditionally understood, further increases in the relative share of educational expenditure could come from a number of new programmes which are discussed in Chapter 4. These cover pre-primary education, compensatory education (which involves particular efforts designed to improve the chances of children from underprivileged groups) and recurrent education which would allow much greater opportunities to adults for alternating education and

work. The possible costs of such programmes are difficult to assess. Some very tentative estimates suggest that increased expenditures in these areas could raise the share of educational expenditure in GDF by around ½ to 1 percentage points. In some cases these expenditures might be replacing spending on traditional education. On the other hand, however, they could involve in the case of adult education some short-run losses in output.

ISSUES

It is difficult to move from this statistical analysis of broad trends to some evaluation, however, tentative, of the achievements of past expenditures and of the needs for new ones. The near absence of official statements on the main objectives of expenditure makes it impossible to assess whether the increased resources which have been allocated to education have fulfilled particular goals. It is probably unrealistic to expect precise formulations of aims and intentions. The public sector cannot follow the decision-making process of a private firm. Many of the alternative choices in education can only be taken on the basis of value judgements which will differ from country to country and from period to period. Nonetheless, it is arguable that in a situation in which real resources are normally under pressure, some statement as to the more important aims of educational expenditure is desirable, even if this may subsequently be subject to political change.

In the absence of such statements, Chapter 2 has put forward a brief list of possible aims and discussed the extent to which they may have been achieved. But the discussion is inconclusive. It is very difficult to measure the extent to which education has contributed to economic growth or to social or economic equality. Apparent progress may have seemed slow if measured against the high expectations put on education not so long ago. But it is arguable that the effects of more education on both growth and social mobility can hardly be assessed, let alone measured, in the short-run. Such effects may well take decades before they can be clearly established.

Future claims on resources cannot therefore be judged on a straightforward cost-benefit basis. Any assessment of whether increasing expenditures on education are warranted or not will crucially depend on society's value judgements in this area. For primary and secondary education, the decision to provide free, universal and compulsory schooling has been generally accepted and so has the State's responsibility for directly ensuring that this objective is met. Rising expenditures in this field are a natural consequence of these decisions. It is not evident from recent experience that the pressures for increased expenditure at these levels will strengthen. On the other hand, it would seem likely that the tendency for real inputs per student to rise roughly in line with per capita incomes will continue and that the scope for significant economies in this area is limited.

Increasing demands are more likely to come from other components of the educational system and notably from the new programmes singled

out in Chapter 4. Many of these are still in the stages of experimentation and their effects cannot be firmly judged. Yet various arguments can be put forward to support the view that, individually or combined, they could make a worthwhile contribution to furthering some of society's aims in the future:

i) If a major preoccupation in the years to come is going to be with output and productivity, then compensatory education can help by allowing a fuller use of the potential of under-privileged groups, pre-school education by freeing mothers for work, and recurrent education (whatever the short-run output losses) by making higher education more responsive to the needs of the economy and by spreading learning through a larger share of the population;

ii) If, on the other hand, society will to some extent be placing less emphasis on the aims of faster quantitative growth, and will be giving more attention to qualitative issues such as equality and cultural values, these types of educational programmes, and notably positive discrimination in favour of disadvantaged groups, could make a positive contribution.

A very broad picture of rising expenditures in these various fields, with roughly constant shares in GDP for primary and secondary education, may thus be considered socially justified in many Member countries. The position is much less clear in the field of higher education. Here, however, it is less evident that increasing expenditures are inevitable. Some small increase is implicit in the projections shown in Chapter 3, but recent trends in enrolments may throw doubt on this. In a number of countries in the area after the very rapid expansion which took place in the late 1960s and early 1970s, the growth in student numbers has not only slowed down but actually fallen.

This may merely be a temporary phenomenon and higher education may over the longer-run resume an upward trend. After all, a century ago universal primary education was hardly regarded as a priority; a hundred years hence it may well be felt that society is rich enough to provide sufficient funds for all its citizens to attend university. An alternative view, however, could argue that the benefits of higher education are very largely privately appropriated and that there is a point beyond which taxpayers should not finance the economic promotion of young people – especially if they stem mainly from already favoured socio-economic groups. According to the first view, budgets for higher education will continue to grow. According to the second, resources could be devoted to socially more productive uses and some measure of private financing should be reintroduced into university education.

A partial return to market forces would clash with egalitarian objectives, unless accompanied by an extensive and subsidised loan system. It is true that, so far at least, the impact of higher university enrolment ratios on equality of opportunity appears to have been modest. And it could be argued plausibly that using the funds originally earmarked for education more directly to relieve poverty could achieve greater social results. On the other hand, such an approach, if successful, would tend

only to relieve poverty at a moment of time, rather than deal with one of its causes. And, as was advanced in Chapter 2, the slow effects upon equality, to date, of more accessible higher education may stem from the long time-lags before social and economic barriers break down. Nor can it be ruled out that pressures for slowing down the growth of higher education might be coming, in part, from those social classes which have benefitted most from past expansion, whose enrolment ratios are near to saturation and whose lifetime earnings could be eroded by further growth in the number of graduates.

One of the purposes of this report has been to document more fully the proposition that future public expenditure on education will not, or should not, be simply an extrapolation of past trends, but will depend importantly on choices by society, or rather by governments acting in its name. Whether the social aim is more equality or more productivity, higher education and the other educational programmes in this report can to some extent be regarded as substitutes. If it is felt that greater inroads into the inequality problem can be made by concentrating on infants than by increasing university places, then it is pre-school rather than higher education which may need expansion. If, similarly, it is felt that productive potential can be enhanced by shifting to forms of recurrent education, then what may be needed is a conversion of university curricula and structures to meet the demands of a much larger proportion of adult students rather than continuing growth in the enrolment of students just out of secondary school.

These various choices have, of course, very different expenditure implications. Only very rough orders of magnitude can be given here. If the choice were to be between pre-primary and higher education, it will be important to know that the cost of a university student to the public budget can, on average, be four times larger than that of an infant attenting a nursery school. In addition, pre-school education frees mothers for work. A shift to recurrent education may not bring about direct increases in expenditure flows but involves costs in the form of losses in output, at least in the short-run. These are just some illustrative examples. Others could be provided. The main point, however, is not whether such figures are accurate estimates of possible alternatives, but rather the fact that such alternatives will have to be faced in the coming decade. It is unlikely that the past rapid growth of expenditures, subject to apparently few constraints, can go on as the OECD area moves into a situation in which conflicting claims on – possibly more slowly growing – resources become increasingly difficult to satisfy.

Of course, an analysis of the kind contained in this report can only provide some indication of the overall constraints and estimates of the costs of various programmes. Beyond this, the issues are of a different nature. The decision as to which aims the educational system should fulfil and how much public expenditure should be devoted to fulfilling these aims is essentially a political decision. And the choice as to which are the best instruments to achieve such aims is, and will remain, the prerogative of the educationalist.

STATISTICAL ANNEX

I. STATISTICAL PROBLEMS AND METHODOLOGY

SOME DATA LIMITATIONS

As mentioned in the main text, the majority of the data available on education cover public education spending on direct education costs. However, such statistics, while giving a general outline of the developments in Member countries, are insufficient for an analysis of the education system as a whole, because (*i*) private educational expenditures are important in some countries, (*ii*) they do not always include all public expenditure on education, and (*iii*) the data are not always consistent or comparable between countries.

i) *Completeness of the Expenditure Data*

Data on public education spending can considerably under-estimate the total resource cost of education. First, *direct private* spending on education is important in some countries, such as the United States, and particularly Japan, where the private higher education sector is large, or Spain, where religious institutions have undertaken an important role in primary and secondary educational institutions. In addition, there are numerous proprietary schools and technical institutes in many countries which have an important place in the post-formal education system. Second, society incurs considerable educational *indirect* costs in the form of foregone earnings, public maintenance or "on-the-job" training. These are generally not included in official budgets or any other figures on the costs of education. There is controversy over the value of including such estimates in the cost of education, but some policy judgements can go badly astray if this information is not available.

ii) *Comprehensiveness of Public Expenditure Data*

Errors in public educational expenditure often occur because some types of education services are provided by Ministries of Labour or Social Welfare, e.g. industrial training and pre-primary education. Public expenditure on student maintenance is sometimes not included in the education budget

but appears elsewhere in the public accounts. Offsetting this, education budgets often include substantial items such as school meals which, for some purposes, one might want to classify as social transfers rather than education spending. Where possible, these items were not included.

iii) *Statistical Inconsistencies and Comparability between Countries*

Recourse was made to several sources of statistics which were not always reconcilable. By and large, national sources were used for the 15 countries covered in detail in the report while OECD sources were used for countries outside this group. This posed problems of comparability between countries. This loss was counterbalanced by a greater certainty that within the restricted group the number of students corresponded to the expenditures. Accuracy, in this context, was increased by combining primary and secondary education levels rather than dealing with them separately. In some countries, only the sum of the two levels was available whilst changes in the definition of each level made it impossible to have consistent time series for primary and secondary education separately in Finland, Germany and Sweden.

DATA SOURCES AND CALCULATIONS USED IN TEXT TABLES

Table 1. RELATIVE SIZE OF STUDENT AND TEACHER POPULATIONS

Students were defined as full-time and part-time, but pre-primary education was not included. For the 15 countries covered in detail, the data come from the tables shown in this Annex. The data source for other countries is the OECD's *Educational Statistics Yearbook*. All the figures on teachers were taken from the *Educational Statistics Yearbook*.

Table 2. PUBLIC EXPENDITURE ON EDUCATION

For the 15 countries covered in detail, the underlying data were taken from the tables shown in this Annex. For the remainder, the source was the *Educational Statistics Yearbook*, Vol. I, Table 32. Data include both current and capital expenditure but the definition of the boundaries of the education system is not known for individual countries (see page 47 of the *Educational Statistics Yearbook*), thus limiting comparability. Elasticities were defined as the ratio of the percentage change in education expenditure over the period to the percentage change in GDP (total or per capita).

Table 3. SHARE OF PUBLIC SECTOR IN TOTAL CURRENT EXPENDITURE ON EDUCATION

The data come from country submissions to the OECD of their National Accounts statistics following the "Present SNA" system. Private expenditure on education is part of item *g* of private consumption as shown

in Table 1 of OECD, *National Accounts of OECD Countries*. The figures for Japan and the United States were taken from the tables at the end of this Annex.

Tables 4 to 6. PUBLIC CURRENT EXPENDITURE, EARLY 1970s – All Education Levels Primary and Secondary and Higher Education

These three tables, subdivide education expenditure into three contributing factors, as defined in the text on page 14, for the 15 countries covered. The expenditure figures cover only current spending and do not include the private sector, even though it may be extensively subsidised by the State.[1] For those countries where the private sector is large, the sum of public and private expenditure is included in brackets to place the public sector in perspective. The figures for the different levels may not add to the total because of undistributed administrative costs which have not been attributed to each level.

Enrolment ratios are "gross" – i.e. all students in a level are divided by the population of a representative age group. These age groups were based on the average length of studies. Difficulties were sometimes encountered at the upper secondary level where the length of schooling varies depending on streams and, in some countries, student numbers drop off quite quickly after compulsory schooling ends. In other countries grade repeating prolongs studies beyond the normal study age. Hence, the representative age group for primary and secondary education were chosen by inspection. They are shown in the country tables below. For higher education, a standard four-year period after the end of secondary education was taken for all countries. This can be open to considerable error as the length of studies varies considerably from country to country.

Tables 7 and 8. CHANGES IN PUBLIC EXPENDITURE – 1963 to Early 1970s; Primary and Secondary and Higher Education

These tables show changes in the levels indicated in the previous table over the base period. The relative price increase is defined in the next section of this annex which shows the basic data employed. The contribution to the total change was derived by the following formula :

If $X_1 = (a_1)(b_1)(c_1)$

and $X_2 = (a_2)(b_2)(c_2)$

then the contribution of a to the change $X_2 - X_1$ is equal to

$$(a_2 - a_1) \quad \frac{(b_1 + b_2)}{2} \quad \frac{(c_1 + c_2)}{2}$$

1. Except for Finland and France.

The growth of public education expenditure given in these two tables are in terms of education expenditure as a percentage of GDP. The growth of education expenditure without reference to GDP can also be of interest and figures are provided in two tables at the end of this section. In this case, the definitions differ only in costs per student which are no longer divided by GDP per capita. In addition, a column is also added on GDP deflators.

Table 9. GROWTH RATES IN FULL TIME STUDENT ENROLMENT

Numbers were drawn from OECD sources and do not directly correspond with the data employed for the group of 15 countries dealt with in detail.

Table 10. PUBLIC CAPITAL EXPENDITURE, 1963 and early 1970s

Data for Finland include investment in the public sector as well as capital expenditure in the private sector paid for by the public authorities.

Annex Table 1. PRE-PRIMARY EDUCATION

	Numbers enrolled in the early 1970s (thousands)[1]	Enrolment ratios in the early 1970s[2]	Additional expenditure as a per cent of GDP in 1985 (real)	
			Enrolment ratio : 0.75	0.90
Australia (1970)	194	0.396	0.28	0.38
Austria (1971)	127	0.533	0.05	0.12
Belgium (1972)	445	1.556	–	–
Canada (1970/71)	400	0.551	0.10	0.19
Finland (1971)	41	0.269	0.23	0.32
France (1973)	2,392	1.340	–	–
Germany (1973)	1,567	0.822	-0.10	-0.07
Italy (1972)	1,466	0.832	–	0.01
Japan (1971)	1,716	0.525	0.08	0.13
Netherlands (1970)	492	1.027	–	–
Norway (1971)	15	0.115	0.50	0.62
Sweden (1971)	131	0.530	0.08	0.18
Switzerland (1968)	140	0.687	0.01	0.07
United Kingdom (1971/72)	351	0.192	0.16	0.21
United States (1972/73)	4,231	0.624	0.10	0.18
Dispersion[3]	..	0.388	0.15	0.17
Average[4]	..	0.548	0.14[5]	0.20[5]

1. Includes private sector.
2. In per cent of a two year age group preceding compulsory primary education.
3. Measured by standard deviation.
4. Geometric mean.
5. Arithmetic mean.

Sources : OECD, *Educational Statistics Yearbook*, 1974 and sources quoted in Country Annex tables.

Annexe Table 2. FACTORS CONTRIBUTING TO THE GROWTH OF PUBLIC EXPENDITURE ON EDUCATION
1963 TO EARLY 1970s[1]
PRIMARY AND SECONDARY EDUCATION

Average annual percentage changes

	Growth rate of current public expenditure on education		Growth rate of contributing factors						Growt rate of rea inputs p studen
			Public expenditure deflator			Enroiment			
	Nominal	Real	Total	GDP deflator	RPED[2]	Total	Relevant age group	Enrol-ment ratio	
Australia	15.0	8.0	6.6	4.0	2.5	3.1	1.8	1.3	4.7
Austria[3]	16.7	8.7	7.3	4.1	3.1	2.9	1.4	1.4	5.7
Belgium	12.1	5.7	6.0	4.5	1.5	1.8	0.9	0.9	3.9
Canada	17.0	10.1	6.3	3.8	2.4	3.3	2.3	1.0	6.5
	(17.0)	(10.1)						(1.0)	(6.5)
Finland	13.1	4.2	8.6	6.8	1.7	0.5	-1.6	1.9	3.6
France	13.3	6.8	6.0	4.8	1.2	1.2	0.1	1.1	5.6
Germany	14.4	7.2	6.8	3.9	2.8	3.2	2.4	0.9	3.8
Italy[3]	10.1	3.2	6.7	4.5	2.1	1.8	0.7	1.1	1.4
Japan	14.3	5.3	8.5	4.8	3.4	-1.9	-2.3	0.4	7.4
	(14.3)	(5.3)				(-1.5)		(0.7)	(7.0)
Netherlands	15.0	3.9	10.7	5.5	4.9	1.6	0.1	1.5	2.3
Norway	12.6	6.5	5.7	5.2	0.5	1.2	-0.1	1.3	5.3
Sweden	13.2	5.6	7.2	4.8	2.2	0.8	-1.2	2.0	4.7
Switzerland	11.9	5.1	6.5	5.4	1.0	2.4	1.2	1.2	2.7
United Kingdom	10.4	5.3	4.8	3.8	1.0	2.1	0.8	1.3	3.1
United States	11.3	5.6	5.4	3.8	1.6	1.4	0.7	0.7	4.1
	(10.9)	(5.2)				(1.0)		(0.2)	(4.2)
Average[4]	13.4	6.1	6.9	4.6	2.1	1.7	0.5	1.2	4.3

1. For the precise year covered for each country in the early 1970s, see Table 4.
2. RPED = relative public expenditure deflator.
3. Total expenditure (capital and current).
4. Arithmetic mean.

Note: Figures in brackets cover both private and public expenditure. Figures not multiply up because of roundings.

Annex Table 3. FACTORS CONTRIBUTING TO THE GROWTH OF PUBLIC EXPENDITURE ON EDUCATION, 1963 TO EARLY 1970s[1]
HIGHER EDUCATION

Average annual percentage changes

	Growth rate of current public expenditure on education		Growth rate of contributing factors						Growth rate of real inputs per student
			Public expenditure deflator			Enrolment			
	Nominal	Real	Total	GDP deflator	RPED[2]	Total	Relevant age group	Enrolment ratio	
Australia	17.1	9.9	6.6	4.0	2.5	13.4	3.3	9.8	-3.1
Austria[3]	19.1	10.9	7.3	4.1	3.1	4.7	1.7	3.0	5.5
Belgium	19.0	12.2	6.0	4.5	1.5	10.4	2.6	7.6	1.7
Canada	29.7 (35.4)	22.0 (27.0)	6.3	3.8	2.4	12.3 (11.9)	5.3	6.6 (6.2)	8.7 (13.5
Finland	20.2	10.7	8.6	3.8	1.7	8.3	5.1	6.0	2.2
France	16.3	9.7	6.0	4.8	1.2	11.5	3.3	7.9	-1.6
Germany	11.7	4.6	6.8	3.9	2.8	5.8	0.5	5.3	-1.1
Italy[3]	19.0	11.6	6.7	4.5	2.1	11.2	1.2	9.9	0.3
Japan	13.1 (15.6)	4.3 (6.5)	8.5	4.8	3.6	5.6 (8.6)	0.6	5.0 (8.0)	-1.3 (-1.9
Netherlands	20.7	9.1	10.7	5.5	4.9	7.6	4.3	3.2	1.4
Norway	17.2	10.9	5.7	5.2	0.5	10.8	1.0	9.7	0.1
Sweden	17.3	9.4	7.2	4.8	2.2	9.0	1.9	6.9	0.4
Switzerland	18.2	11.0	6.5	5.4	1.0	6.2	0.2	6.1	4.5
United Kingdom	16.3	11.0	4.8	3.8	1.0	8.1	0.8	7.3	2.6
United States	15.3 (13.4)	9.4 (7.5)	5.4	3.8	1.6	9.8 (7.7)	3.5	6.0 (4.1)	-3.6 (-0.2
Average[4]	18.0	10.5	7.4	4.6	2.1	9.1	2.3	6.7	1.1

1. For the precise year covered for each country in the early 1970s, see Table 4.
2. RPED = relative public expenditure deflator.
3. Total expenditure (capital and current).
4. Arithmetic mean.

Note: Figures in brackets cover both private and public expenditure. Figu not multiply up because of roundings.

Tables 13, 14 and 15. PUBLIC EXPENDITURE ON EDUCATION IN 1985

In Tables 13 and 14 the figures represent the absolute change in expenditure as a percent of GDP starting from the levels given in Tables 5 and 6 of the main text. In Table 15, the effect of relative price increases is the result of multiplying the early 1970 level by the increases in the projected relative public expenditure deflator. The increases given under each one of the assumptions are in real terms only. Hence, to obtain a total effect each of the real increases must be augmented by the rise in the public expenditure deflator.

PRE-PRIMARY EDUCATION

Some figures on pre-primary education are presented in the table below. Enrolment levels were taken from national sources and the OECD's *Educational Statistics Yearbook*. Enrolment ratios were calculated by using population data for the two year age-span before the beginning of primary school. The increase in expenditure to 1985 was estimated by taking the increase in student numbers from present enrolment ratios multiplied by the cost per student in primary education where available (and primary and secondary education when not available). The results assume that all the increase in expenditure is provided by the public sector and that the size of the private sector remains stable.

II. PRICE DEFLATORS FOR EDUCATIONAL EXPENDITURES

The deflators used in this report come from a variety of sources, and are of two main types:

i) Implicit public consumption deflators derived from OECD national accounts statistics for Australia, Austria, Canada, Finland, France, Italy, Japan, Switzerland and the United States;

ii) Implicit education deflators derived either from the national accounts or supplementary information received from national administrations of Belgium, Germany, the Netherlands, Norway, Sweden and the United Kingdom.

As mentioned in the main text, *a priori*, it should be expected that the deflator for the education sector should be higher than the deflator for public consumption for two main reasons:

i) The labour component in education is much higher than in other public sector activities;

ii) Wages for teachers may have increased more rapidly than in other sectors of the public service.

However, in the six countries where a comparison could be made, the education deflator was below the public consumption deflator in two cases, above it in one case and in three countries rose at a roughly similar rate.

While it is indisputable that the relative size of the labour component tends to be higher in education than in the public sector as a whole,[1] there appears to be considerable variation among countries in the rate of increase of teachers' salaries relative to other civil servants salaries. In some countries, such as Canada, where the expansion in the number of teachers and staff was important at all levels, an inelastic supply of teachers probably did engender a rapid increase in salaries (these rose 9.5 per cent a year over the period, compared with a rise in the public consumption deflator of 5.9 per cent a year). A similar situation may well have existed in the United States. However, in many European countries the situation appears

1. Approximately 80 per cent compared to 60 per cent for general government.

to have been different. Recruitment of teaching staff is often more closely controlled by the education departments who provide free and sometimes fully supported training to would-be teachers through normal schools or teachers' colleges, and, in some cases, demand in return a contract of a fixed number of years teaching before departure. In other countries, teachers unions have tended to have weak bargaining positions because of the centralised control of the education system. These factors, accompanied by the fact that teachers qualifications are often non-marketable outside the teaching profession, appear to have led to a slower growth in wages than in other sectors of the civil service.

It is difficult to foresee the trends of education deflators in the future. The past differences between education and public consumption deflators may reflect temporary phenomena which in the longer run will tend to be reversed by market forces. But the rapid growth in numbers of graduates and the slowdown in the expansion of the education system may lead, over the coming decade at least, to an ample supply of potential teachers which may depress the growth of wages in the absence of strong union bargaining. It is unknown, however, how long such factors could continue to put downward pressure on wage rates in this sector without some response on the supply side, either in terms of quality or numbers.

Relative price deflators were obtained by dividing the public consumption or education deflator by the GDP deflator. The values of the deflators for education and public consumption are given in the table below. The sources used are as follows:

Australia, Austria, Canada, Finland, France, Italy, Japan, Switzerland, United States: public consumption deflator; OECD, *National Accounts of OECD Countries. 1961-1972, 1962-1973.*

Belgium: public consumption deflator: *National Accounts of OECD Countries. 1961-1972.* Education deflator: implicit deflator for public consumption of education obtained from the Belgian authorities. The latter also supplied a deflator for investment in the educational sector which was used in Table 10.

Germany: public consumption deflator and education deflator: internal document from Bundesministerium für Wirtschaft, "Relative Preise", 10.6.1974. The education deflator is a weighted average (67 per cent wages and salaries and 33 per cent other goods and services). Weights are based upon the work of Mary Garin-Painter, op. cit. The public consumption deflator is taken from the same document.

Netherlands: public consumption deflator: *Dutch National Accounts.* Education deflator: implicit deflator calculated from statistical material received from the Central Bureau of Statistics in the Netherlands.

Norway: public consumption deflator: *Norwegian National Accounts.* Education deflator: implicit price deflator calculated from statistical material received from the CBS of Norway. The index is a weighted average of a number of components of current costs broken down for local and central government expenditure.

Sweden: public consumption deflator: *Swedish National Accounts – 1963-1973*. Education deflator: implicit price deflator for public consumption of education from the same source.

United Kingdom: public consumption deflator: *United Kingdom National Income and Expenditure – 1963-1973*. Education deflator calculated from official information received from the Department of Education and Science, "Price Indices, Real Expenditures and Related Matters". The deflator is a weighted average of the "Mark I" index spliced with the old "statistical branch" index and the "Tress-Brown" index.

Annex Table 4. IMPLICIT PRICE DEFLATORS FOR EDUCATION EXPENDITURE AND PUBLIC CONSUMPTION

(Indices 1963 = 100)

		1970	1971	1972	1973
Australia[1]	PCD	148.5	165.4	179.9	
Austria	PCD	161.6	174.5	189.2	
Belgium	PCD	138.2	150.3	163.4	
	ED			168.7	
Canada[1]	PCD	151.4	161.3	173.2	
Finland	PCD	165.7	181.2	198.1	228.3
France	PCD	146.1	156.6	166.4	179.3
Germany	PCD	157.9	174.6	190.1	
	ED	157.7	176.0	187.1	
Italy	PCD	142.7	164.4	178.5	
Japan[1]	PCD	175.2	191.6	212.6	
Netherlands	PCD	194.1	216.6	241.9	
	ED	205.7			
Norway	PCD	151.3	165.4	175.2	
	ED	147.4		177.1	
Sweden	PCD	173.1	194.1	208.9	
	ED	156.8	171.9	182.3	
Switzerland	PCD	148.4	161.6	176.1	
United Kingdom[1]	PCD	156.1	177.4	186.1	
	ED	144.4	160.4	177.6	
United States[1]	PCD	141.2	150.2	159.7	

1. Fiscal year data (Base: 1963 F.Y. = 100).

Note: PCD = Public consumption deflator.
ED = Education deflator.

III. BASIC DATA AND SOURCES

The basic data for the fifteen countries studied in detail are given in the following tables. The data have, in most cases, been drawn from national sources. Student numbers were, by and large, defined as full-time students plus part-time in full-time equivalents, except for Norway.[1] The private sector loomed large at the primary and secondary level only in France, Finland, Japan, and the United States. In the Netherlands, the totally subsidised private sector was included in the public sector. Some data problems appeared for Finland and France where the private sector is heavily subsidised; in this study the subsidies were included in public expenditures. For Canada, Japan and the United States, private expenditures are given as memorandum items.

1. Full-time and part-time adjustments were obtained officially or semi-officially for Canada, Germany, the Netherlands, the United Kingdom and the United States. For all other countries, full-time adjustments were made by dividing part-time students by two.

AUSTRALIA

	1963/64[1]	1971/72[1]
EXPENDITURE (millions of Australian dollars)		
Primary and Secondary	385	1,150
Current	311	954
Capital	74	196
Higher	131	446
Current	97	344
Capital	34	102
Total[2]	554	1,674
STUDENTS[3] (thousands)		
Primary and Secondary[4]	1,733	2,215
Higher	73	199
Total	1,806	2,414

1 1st July to 30th June

2 Includes some expenditure undistributed by level (38 and 70 $ millions in 1963/64 and 1971/72 respectively) and a very small amount of subsidies

3 The number of students are averages of 1963 and 1964 for 1963/64 and 1971 and 1972 for 1971/72

4 Students at technical colleges are included as full-time equivalents by dividing their total number by two

Note: Representative age group for primary and secondary education: 5–17 years.

Source: Submission by the Australian Authorities to the Secretariat.

AUSTRIA

	1963	1972
EXPENDITURE (millions of schillings)		
Primary and Secondary	..	19,239
Current	4,350	14,959
Capital	..	4,280
Higher	..	3,471
Current	617	2,634
Capital	..	837
Total	6,443[1]	23,643[1]
STUDENTS[2] (thousands)		
Primary and Secondary	1,080	1,394
Higher	49	74
Total	1,129	1,468

1 Includes some expenditure undistributed by level (and for 1963 total capital expenditures equivalent to 1,178 millions of schillings).

2 The number of students is a weighted average of school years 1962/63 and 1963/64 for 1963 and 71/72 and 1972/73 for 1972

Note: Representative age group for primary and secondary education: 6–18 years.

Sources: Österreichisches Statistisches Zentralamt, *Statistisches Handbuch fur die Republik Österreich*, Bundesministerium fur Unterricht und Kunst, *Österreichische Schulstatistik*; UNESCO Questionnaire; submission by the Austrian Authorities to the Secretariat.

BELGIUM

	1963	1972
EXPENDITURE (millions of francs)		
Primary and Secondary	25,972	69,518
Current	23,352	65,133
Capital	2,620	4,385
Higher	2,697	13,564
Current	2,288	10,912
Capital	409	2,652
Total	28,669	83,082
Memorandum item:		
Pre-primary	3,223	8,420
STUDENTS[1] (thousands)		
Primary and Secondary	1,546	1,808
Higher	53	127
Total	1,599	1,936

1. The number of students is a weighted average of school years 1962/63 and 1963/64 for 1963 and 1971/72 and 1972/73 for 1972.

Note Representative age group for primary and secondary education: 6–17 years.

Source Submission by the Belgian Authorities to the Secretariat.

CANADA

	1963/64[1]	1970/71[1]
EXPENDITURE (millions of Canadian dollars)		
Primary and Secondary	1,873	5,209
Current	1,515	4,547
Capital	358	662
Higher	373	1,757
Current	210	1,299
Capital	162	458
Total	2,246	6,965
Memorandum item:		
Private expenditure	295	711
STUDENTS (thousands)		
Primary and Secondary	4,572	5,749
Higher	239	523
Total	4,811	6,286

1. 1st July to 30th June

Note: Representative age group for primary and secondary education: 6–19 years.

Sources: Statistics Canada, *Education in Canada*, 1973; UNESCO Questionnaire; Unpublished data received from Canadian Authorities.

FINLAND

	1963	'973
EXPENDITURE[1] (millions of markkaa)		
Primary and Secondary[2]	1,172	3,528
Current	916	3,144
Capital	256	384
Higher	93	517
Current	66	417
Capital	27	99
Total	1,265	4,045
STUDENTS (thousands)		
Primary and Secondary[3]	282	1,034
Higher	30	66
Total	1,012	1,100

1 Includes subsidies to the private sector.

2 Includes expenditure on adult education.

3 Includes students following adult education courses. Their number was adjusted to something similar to a full-time equivalent by assuming that the "full-time" cost of an adult student is the same as that of other primary and secondary students; total expenditure on adult education was then divided by this "full-time" cost.

Note: Representative age group for primary and secondary education: 7–19 years.

Sources: UNESCO Questionnaire; Nordic Council and Nordic Statistical Secretariat, *Nordisk Statistisk Årsbok*, Stockholm. Submission by the Finnish Authorities to the Secretariat.

FRANCE

	1963	1973
EXPENDITURE (millions of francs)		
Primary and Secondary	6,935	24,423
Current[1]	6,291	21,880
Capital	644	2,543
Higher	1,997	6,871
Current	1,297	5,862
Capital	700	1,009
Total[2]	10,143	34,532
Memorandum item:		
Pre-primary	..	1,550
STUDENTS[3] (thousands)		
Primary and Secondary	[illegible]	9,711
Higher	[illegible]	917
Total	8,93[illegible]	10,628

1. Includes subsidies to the private sector.
2. Includes some expenditure undistributed by level.
3. The number of students is a weighted average of school years 1962-63 and 1963-64 for 1963 and 1972-73 and 1973-74 for 1973.

Notes: Representative age group for primary and secondary education: 6-17 years. The expenditure data are for the "budget vote" rather than the "budget exécuté", and as a result may be slightly different from actual expenditures. Similarly, capital expenditures are "crédits de paiement" rather than expenditures. Data cover only the budget of the Ministry of Education. Figures which include the expenditures of other Ministries were obtained for 1970 in a special study of the OECD's Directorate for Social Affairs, Manpower and Education (*Mimeo*, 1976). Assuming that the ratio between such expenditures and the Ministry of Education's budget in 1970 had not changed in 1973, the figures for current expenditure in the table above were multiplied by factors of 1.41 and 1.15 for primary and secondary and higher education respectively to obtain the data used in Tables 4, 5 and 6.

Sources: Projet de loi de finances 1974, "Budget de Programmes", 1973; and *Education*, Rapport des Commissions du 6e Plan 1971-75.

GERMANY

	1963	1971
EXPENDITURE (millions of DM)		
Primary and Secondary	7,940	22,348
Current	5,600	16,427
Capital	2,340	5,921
Higher	3,601	9,326
Current	2,645	6,423
Capital	956	2,903
Total[1]	11,774	34,111
STUDENTS (thousands)		
Primary and Secondary[2]	7,827	10,105[3]
Higher	353	554[3]
Total	8,1[illegible]	10,659[3]

1. Includes some expenditure un[illegible]stributed [illegible] evel
2. Part-time vocational students are included as f[illegible]ime equivalents by dividing their total number by three.
3. The number of students for 1971 is a weighted average of the data for school years 1970-71 and 1971-72.

Note: Representative age group for primary and secondary education: 6–17 years.

Sources: W. Albert and Ch. Oehler, *Die Kulturausgaben der Länder, des Bundes und der Gemeinden 1950–1967*, Weinheim 1972; Statistisches Bundesamt, *Finanzen und Steuern*, Reihe 5 "Ausgaben der öffentlichen Haushalte für Bildung, Wissenschaft und Kultur", 1971; and *Statistisches Jahrbuch*; Bundesministerium für Bildung und Wissenschaft, und Statistisches Bundesamt, *Bildung im Zahlenspiegel*, 1974; Der Bundesminister für Bildung und Wissenschaft, *Grunddaten* and *Strukturdaten*, 1974.

ITALY

	1963	1972
EXPENDITURE (billions of lire)		
Primary and Secondary	893.9	2,131.4
Current	..	..
Capital	..	..
Higher	70.8	338.4
Current	..	..
Capital	.	..
Total	964.8[1]	2,792.6[1]
STUDENTS (thousands)		
Primary and Secondary	7,145	8,349
Higher	242	631
Total	7,388	8,980

1. Includes some expenditure undistributed by level.

Notes: Representative age group for primary and secondary education: 6–18 years. [illegible]ata are for the Education Ministry only and do not include the spending of the local authorities which represents 15 per cent of the total.

Sources: Istituto Centrale di Statistica, *Annuario statistico della istruzione*; *Relazione generale sulla situazione economica del paese*.

JAPAN

	1963[1]	1971[1]
EXPENDITURE (billions of yen)		
Primary and Secondary	846.3	2,641.3
Current	645.8	1,876.5
Capital	200.4	764.8
Higher	111.4	375.5
Current	106.8	286.1
Capital	4.7	89.4
Total	957.7	3,016.9
Memorandum item:		
Private expenditures	234.7	754.3
STUDENTS (thousands)		
Primary and Secondary	19,902	17,045
Higher	280	432
Total	20,182[2]	17,477[3]

1. Fiscal year for expenditures; school year for students.
2. Plus 2 720 million students in private institutions.
3. Plus 3 726 million students in private institutions.

Notes: Representative age group for primary and secondary education: 6–17 years. The expenditure data include only school expenditure in the public sector

Sources: Bureau of Statistics, Office of the Prime Minister, *Japan Statistical Yearbook*; Ministry of Education, *Education in Japan 1971*.

NETHERLANDS

	1963	1970
EXPENDITURE (millions of guilders)		
Primary and Secondary	..	..
Current	1,612	4,292
Capital	..	..
Higher	..	..
Current	429	1,601
Capital	..	..
Total	(2,041)[1]	(5,893)[1]
Memorandum item:		
Pre-primary	(125)[1]	(493)[1]
STUDENTS[2] (thousands)		
Primary and Secondary	2,311	2,580
Higher	123	205
Total	2,433	2,785

1. Current expenditures only.
2. The number of students is a weighted average of school years 1962/63 and 1963/64 for 1963 and 1969/70 and 1970/71 for 1970, expressed in full-time equivalents.

Note: Representative age group for primary and secondary education: 6–18 years.

Sources: Unpublished data received from Netherlands Central Bureau of Statistics; Central Bureau of Statistics, *Statistical Yearbook of the Netherlands*

NORWAY

	1963	1970
EXPENDITURES (millions of kroner)		
Primary and Secondary	1,715	3,778
Current	1,332	3,056
Capital	383	722
Higher	222	600
Current	180	548
Capital	42	52
Total	2,085[1]	4,670[1]
STUDENTS (thousands)		
Primary and Secondary	646	702
Higher	25	51
Total	671	753

1. Includes some expenditure undistributed by levels.

Note: Representative age group for primary and secondary education: 7-18 years.

Sources: Central Bureau of Statistics, *Statistical Yearbook of Norway*, and *Undervisningsstatistikk*; Nordic Council and Nordic Statistical Secretariat, *Nordisk Statistisk Årsbok*, Stockholm; Submission by the Norwegian Authorities to the Secretariat.

SWEDEN

	1963	1970
EXPENDITURE (millions of kronor)		
Primary and Secondary[1]	3,748	8,403
Current	2,984	7,088
Capital	764	1,315
Higher	688	2,678
Current	624	1,902
Capital	64	776
Total	4,579[2]	12,006[2]
STUDENTS (thousands)		
Primary and Secondary[3]	1,160	1,230
Higher	68	124
Total	1,228	1,354

1. Includes expenditure on adult education.
2. Includes some expenditure undistributed by level.
3. Includes students following adult education courses. Their number was adjusted to something similar to a full-time equivalent by assuming that the "full-time" cost of an adult student is the same as that of other primary and secondary students: total expenditure on adult education was then divided by this "full-time" cost.

Note: Representative age group for primary and secondary education: 7-18 years.

Sources: Central Bureau of Statistics, *Statistisk Årsbok for Sverige*; Nordic Council and Nordic Statistical Secretariat, *Nordisk Statistisk Årsbok*, Stockholm; Unpublished data received from the Central Bureau of Statistics.

SWITZERLAND

	1963	1972
EXPENDITURE (millions of francs)		
Primary and Secondary	1,375	4,029
Current	1,082	2,984
Capital	293	1,044
Higher	265	1,264
Current	214	961
Capital	51	303
Total	1,640	5,292
STUDENTS[1] (thousands)		
Primary and Secondary	814[2]	1,005
Higher	26	46
Total	841	1,050

1. The number of students is a weighted average of school years 1962/63 and 1963/64 for 1963 and 1971/72 and 1972/73 for 1972.
2. Secretariat estimate based on an interpolation of figures for 1961/62 and 1967/68.

Note: Representative age group for primary and secondary education: 6–18 years.

Sources: Bureau federal de statistiques. *Finances et impôts de la Confédération, des Cantons et des Communes*, and *Annuaire statistique de la Suisse*; Centre suisse de documentation. *Statistiques scolaires de la Suisse*; Conseil suisse de la science. *Rapport sur le developpement des universites suisses*; Unpublished data received from the Swiss Authorities.

UNITED KINGDOM

	1963[1]	1971[1]
EXPENDITURE (millions of pounds sterling)		
Primary and Secondary	1,011	2,247
Current	764	1,682
Capital	248	565
Higher	238	710
Current	172	575
Capital	66	135
Total	1,433[2]	3,351[2]
Memorandum item:		
Pre-primary	3	9
STUDENTS (thousands)		
Primary and Secondary	8,404	9,954
Higher	272	509
Total	8,676	10,463

1. Fiscal year for expenditures; school year for students.
2. Includes some expenditure undistributed by levels

Note: Representative age group for primary and secondary education: 5–17 years.

Sources: Department of Education and Science. *Education Statistics for the United Kingdom*, HMSO, London; Central Statistical Office, *Annual Abstract of Statistics*; Submission by United Kingdom Authorities to the Secretariat.

UNITED STATES

	1963/64[1]	1972/73[1]
EXPENDITURE (billions of dollars)		
Primary and Secondary	21.4	51.9
Current	17.6	46.2
Capital	3.8	5.7
Higher	6.4	20.7
Current	4.9	17.7
Capital	1.5	3.0
Total	27.8	72.6
Memorandum item:		
Private expenditures	7.8	16.3
STUDENTS (thousands)		
Primary and Secondary	40,187	45,744
Higher	2,351	5,454
Total	42,538[2]	51,198[3]

1 1st July to 30th June.

2 Plus 7.6 million students in private institutions.

3 Plus 6.7 million students in private institutions.

Notes Representative age group for primary and secondary education: 5–17 years. Children in pre-primary schools aged 5 are included in primary and secondary.

Sources Department of Health, Education and Welfare, *Digest of Educational Statistics; Projections of Educational Statistics to 1982–83*, Washington 1974.

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