Science budget : allocations, 1987-88, planning figures, 1988-89-1989-90 : advice to the Secretary of State for Education & Science from the Advisory Board for the Research Councils.

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SCIENCE BUDGET:

ALLOCATIONS 1987-88
PLANNING FIGURES
1988-89–1989-90

Advice to the

SECRETARY OF STATE
FOR EDUCATION & SCIENCE

from the

ADVISORY BOARD FOR
THE RESEARCH COUNCILS

FOREWORD

THE ADVISORY BOARD FOR THE RESEARCH COUNCILS was established by the Secretary of State for Education and Science in 1972 with the following terms of reference:-

a) To advise the Secretary of State on his responsibilities for civil science with particular reference to the Research Council system, its articulation with the universities and departments, the support of post-graduate students and the proper balance between international and national scientific activity;

b) To advise the Secretary of State on the allocation of the Science Budget amongst the Research Councils and other bodies, taking into account funds paid to them by customer departments and the purposes to which such funds are devoted:

c) To promote close liaison between Councils and the users of their research.

The Board submits advice to the Secretary of State for Education and Science in the spring of each year in advance of the year's public expenditure survey on the overall size of the Science Budget; and at the end of the year once the outcome of the survey is known on the allocations to funded bodies.

The Board's advice in 1986 on the overall size of the Science Budget was published in July 1986.

On 6 November 1986 the Government announced the outcome of the public expenditure survey for the Science Budget: the Government made available additional sums of £24m, £20m and £20m respectively for the financial years 1987-88, 1988-89 and 1989-90. This report contains the Board's advice on the allocation of the Science Budget for 1987-88, and on planning figures for allocations for 1988-89 and 1989-90.

ABRC
February 1987

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DECEMBER 1986

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Rt Hon Kenneth Baker MP

Your reference

Our reference

3 December 1986

Dear Secretary of State,

1986 PUBLIC EXPENDITURE SETTLEMENT: SCIENCE BUDGET ALLOCATIONS

1. I attach the Board's advice on Science Budget allocations in the light of your announcement on 6 November of the outcome of this year's public expenditure survey.

2. Early decisions are needed in respect of our recommended allocations so that the Science Budget bodies can draw up their draft parliamentary estimates for 1987-88; and so that they may have confirmed planning figures for later years. Our recommendations are summarised in Table 3 at the end of our advice. I should be glad to discuss them with you if that would be helpful.

3. Since 1982 the Board's annual advice to you on the outcome of the public expenditure survey has been published. The Board hopes that you will agree to the publication of the present advice as soon as it can be arranged.

Yours sincerely

David Phillips

DAVID PHILLIPS

SUBMISSION TO THE SECRETARY OF STATE

1986 PUBLIC EXPENDITURE SETTLEMENT: SCIENCE BUDGET ALLOCATIONS

Introduction

1. On 6 November the Secretary of State announced that the Science Budget would be £654m in 1987-88 representing an increase in cash of £24m compared with previous plans. In each of the following years an additional £20m would be available compared with previous plans. This submission presents the Board's response to this announcement; and our advice on the allocation of the new Science Budget totals. Firm decisions are required for 1987-88; while for later years bodies require a provisional indication of their likely allocations for planning purposes.

General comment on the settlement

(i) Science Budget

2. Our reaction to the settlement is one of dismay. In our advice to your predecessor, at the beginning of this year's public expenditure survey, we recommended additional provision for the Science Budget of £35m in 1987-88 rising to £50m in 1988-89 and £60m in 1989-90. We also advised full compensation for the effects of the decline of the £ on foreign exchanges on the cost of international subscriptions (eg to CERN and ESA). International subscriptions account for more than 10% of the Science Budget. In our advice we said:

> "We are putting our bid forward as the **minimum** increase necessary to put the Science Budget in a position adequately to respond to national needs. We urge the Government to regard meeting the bid as a necessary investment which should yield substantial returns".

3. The new money provided actually falls significantly short of what would be needed just to maintain the buying power of the Science Budget <u>at the level it was at the time we formulated our advice.</u> Since then (April) the £ has continued to fall against European currencies, taking the total increase in the sterling cost of

international subscriptions to over £20m in 1987-88. A second factor has been the negotiation of a new pay settlement for the scientific civil service, representing an 8% increase on previous salary levels, 5% more than the inflation allowance in the Government's plans. Most Research Council staff are paid on scientific civil service scales; others are paid on NHS-related or on university pay scales where settlements in excess of the Government's inflation factor are also expected. The Research Councils have no say in the negotiation of any of these pay settlements. In total, this year's pay settlements are expected to cost the Research Councils up to £9m per annum more than the Government's plans have allowed.

4. The gap between these increased costs - pay and international subscriptions - and the additional money provided is brought out in Table 1.

Table 1

£m

	1987-88	1988-89	1989-90
1. Cost increases			
- international subscriptions	20.5	25.5	25.5
- Pay increases not covered by Government's inflation allowance	9.0	9.0	9.0
Total	29.5	34.5	34.5
2. New Money	24.0	20.0	20.0
3. Shortfall (1) - (2)	5.5	14.5	14.5
4. (3) as % of Science Budget Total (%)	0.9	2.3	2.2

5. These figures show that after this year's PES settlement, the Science Budget is actually worse off in real terms - by almost 1% in 1987-88 rising to more than

2% in 1988-89 - than it was in April when we advised of the need for additional provision of £35m in 1987-88 rising to £60m in 1989-90. At that time we estimated that the Government's plans implied at least a 1% reduction in real terms between 1987-88 and 1988-89. In the light of developments since April the total reduction by 1988-89 has become at least 3%. We say "at least" because these estimates make no allowance for the increasing real cost of scientific equipment and materials. There are two aspects to this: on the one hand the availability of technologically more advanced equipment in already capital intensive fields; on the other the increasing dependence of all fields of science on costly equipment and techniques. Studies in the USA which have compared start-up costs for university departments in particular research fields have suggested that equipment costs per scientist rise at 20% per annum. The Royal Society is to undertake a similar study in the UK. A significant proportion of the scientific equipment used in the science base has to be imported and the decline of the £ has been a further factor pushing up costs.

6. Table 2 (page 4) contrasts the trend in the real value of the Science Budget between 1985-86 and 1989-90:-

a) measured against average inflation as indicated by the GDP deflator (line 4); and,

b) taking some account of the additional costs (over and above average inflation) attributable to international subscriptions, restructuring, superannuation and pay settlements in excess of the Government's provision for inflation (line 5).

7. The first of these series (line 4) gives an impression of growth, which is wholly inconsistent with the acute problems of financial management which the Research Councils are facing. The second series (line 5) is much closer to reality, but even this understates the pressures on the Science Budget because, as the footnote says, it makes no allowance for the increasing costs of equipment and materials mentioned in paragraph 5 above.

(ii) The Universities

8. In his announcement of 6 November 1986, the Secretary of State announced that the recurrent grant for the universities between the financial years 1986-87 and 1987-88 will increase in cash by £95m or 7.2%. This increase is in excess of

Table 2

1986 PES OUTCOME: OVERALL IMPLICATIONS

£m

	1985-86	1986-87	1987-88	1988-89	1989-90
1. January 1986 plans (Cmnd 9702)	584	615	630	644	660
2. Latest plans	NA	615	654	664	680*
3. Increase of (2) over (1)	-	-	24	20	20
4. Index of latest plans in constant prices (GDP deflator)	100	102	105	103	102
5. Index of latest plans in constant prices making allowance for increased international subscriptions and pay costs+	100	99	99	97	97

* PES transfers for additional commitments eg student benefits, increased UK contribution to European Space Agency will result in small adjustments to the 1987-88 to 1989-90 figures.

+ Including superannuation costs. Note: this index takes no account of the effect on buying power of increased scientific equipment and materials costs.

the expected average inflation rate and it might be thought that the pressures on the Science Budget would be eased somewhat by virtue of a rather better settlement for the universities - which constitute the other side of the dual support system.

9. However, in his announcement the Secretary of State made clear that, within the increased amounts of recurrent grant, he expected the UGC to set aside provision for redundancy and premature retirement costs; essential repairs and maintenance of plant and buildings; increases in library purchasing; special initiatives in teacher training; and an expansion of continuing education. The UGC have therefore had to hold back sums from the distribution of block grant in order to provide for these purposes. While elements of them, for example the increase in library purchasing, could benefit scientific research in the universities, in general they will not. A more realistic assessment of how the university settlement might serve to ease pressures on the dual support system is derived therefore from considering the increase in the sum the UGC has been able to distribute to univerisites as block grant. In cash terms, and for academic years, that increase is 2.2% between 1985-86 and the revised figure for 1986-87; and 3.3% between that figure and the figure for 1987-88. Both these increases are less than the rates of inflation which the Government is itself expecting over this period.

10. We appreciate that there are many pressing claims on public expenditure. We appreciate the difficult tasks the Government has in reconciling these claims within its overall policy on public expenditure and borrowing. We know that all those with an interest in particular expenditure programmes are inclined to argue that their claims for additional funds are in some sense special.

11. With this in mind, it may be helpful to restate the principal arguments we deployed in support of our case for increasing the nation's investment in science:

i) whatever analyses based on average rates of inflation purport to show, the real buying power of the Science Budget has declined and is continuing to decline. The country's investment in its science base is falling further behind the investment made by other OECD countries;

ii) demands on the UK science base are growing. There are social and medical demands, for example, the AIDS emergency, where our understanding of the disease and our capacity to work towards practical counter-measures

are critically dependent on fundamental research supported by the Science Budget. There are industrial demands, with signs of increasing awareness in industry of their dependence on the science base for technological innovation. Industrialists are seriously concerned about the effect of financial pressures on the capacity of the science base to provide industry with the support it needs; and,

(iii) given the increasing importance of science and technology in all sectors of national life, and the rapid growth of scientific opportunities, present levels of investment are simply inadequate. Our comparative study of expenditure on science in 6 OECD countries supports this view.

12. It would appear that the Government have set aside these arguments. The Government's declared policy, nonetheless, is to maintain and enhance the strength and quality of the science base. Our advice has to be that this policy and the cumulative tenor of the Government's financial decisions can be reconciled only by reducing significantly the scale of the science base in terms of the numbers of fields in which world class effort is maintained; the numbers of researchers employed and the numbers of laboratories. This kind of contraction will require substantial restructuring funds. We shall be addressing the implications of a major contraction in the strategy paper which we hope to have ready as a basis for consultation in the first quarter of next year. But our strategy paper will also restate our firm view that it cannot be sensible to reduce (whether by default or by overt policy) the research capability of an advanced industrial economy at a time of rapid scientific and technological development.

Advice on Allocations

International Subscriptions

13. Our April submission set out many claims against any new money that might emerge from the public expenditure survey; for example, support for the strategic areas which SERC is seeking to build up at the science/engineering interface; and helping to meet the urgent need to boost equipment spending across a wide range of science. However, the progressive slide during the year of the £ against European currencies and other pressures on costs have effectively removed any discretion we

might have had over the allocation of the new money. As we have pointed out in paragraphs 3 and 4 above the increased costs of international subscriptions and of pay exceed the new money provided in each of the next 3 years.

14. In 1987-88 SERC faces an increase of £20m in the total costs of its international subscriptions. The MRC faces an increase of £0.5m per annum from 1987-88 in the cost of their subscription to the European Molecular Biology Laboratory (EMBL). We see no logic in requiring SERC and MRC to absorb their international subscriptions costs so that all or some part of the new money can be deployed to the claims we identified in our April submission. The fact is that SERC could absorb its international subscriptions deficit only at a devastating cost to its domestic programme.

15. The major part of SERC's international subscriptions deficit is accounted for by the CERN subscription. We have noted that the UK is committed to continuing membership of CERN at least until January 1988. In principle there is an option to give the necessary 12 months' notice in December this year (1986) for withdrawal from CERN at January 1988. The funds saved from calendar year 1988 onwards could them be redeployed within the Science Budget. However, we recognise that it would be unrealistic to ask Ministers to decide before the end of 1986 to give notice of leaving CERN, even if the Abragam review were not in existence. For practical purposes, therefore, we must regard the UK as being committed to paying its CERN subscription in full up to January 1989, that is throughout the 1987-88 financial year and for 9 months of the 1988-89 financial year.

16. In 1988-89 the new money available falls to £20m - insufficient to cover SERC's international subscriptions deficit which will rise to £25m at current exchange rates. For the reasons given in the previous paragraph, we recommend that the extra £20m available in 1988-89 be allocated to SERC, subject to review (downwards only) in the light of further exchange rate movements. This means that MRC will in that year have to absorb its smaller international subscriptions deficit of £0.5m.

17. The position in 1989-90 remains too unclear for us to be able now to make any recommendation about allocations for that year. One factor will be the findings of the Abragam review, which are expected in mid-1987. We are clear, however, that in preparing its response to Abragam the Government will need to take account

of the following factors:

i) last year, in considering the Kendrew report, ABRC and SERC thought that an acceptable level of UK support for CERN, bearing in mind other pressures on the Science Budget, was no more than about £30m - 20-25% less than the then current UK subscription of £40m;

ii) the fall of the £ over the last year has increased the sterling cost of the CERN subscription to some £55m;

iii) the possibility that further adverse exchange rate movements will cause a continuing rise in the costs of our CERN subscriptions.

18. The advice above in respect of allocations to SERC and MRC leaves £3.5m out of the £24m available in 1987-88. We have considered the allocation of this £3.5m jointly with the allocation of some £1m which remains in the ABRC's flexibility margin for 1987-88. (The greater part of the margin - £11.56m - is being used to purchase a third supercomputer, as agreed with your predecessor). Of the £1.1m remaining in the margin, £200,000 has already been set aside for the agents' fees that would be due if for any reason the sale of the AFRC's Plant Breeding Institute were cancelled. This leaves £900,000 together with the £3.5m of new money from the settlement; £4.4m in total.

University research fellowship scheme

19. We recommend that a modest amount of this sum be used to fund a further 20 fellowships under the Royal Society's university research fellowship scheme. This is a highly successful scheme which since 1983-84 has provided a total of 94 university research posts for bright young scientists and engineers. The fellowships are for a fixed term of 5 years in the first instance, but renewable. They are proving an invaluable means of giving promising scientists and engineers an opportunity to develop their research at a time when there is a dearth of the more conventional type of academic appointment. The scheme helps keep talented new blood working in the science base and in the UK. Looking ahead to the mid 1990s when a large number of university academic staff will be retiring, it will be important to ensure that there are good quality people available to fill the vacancies. The Royal Society scheme

is an important instrument for keeping such people in play. Without it we believe that many more talented young scientists and engineers would abandon scientific careers or be tempted to pursue them abroad. The poor outlook for science in the light of this year's public expenditure settlement strengthens the case for keeping the scheme going.

20. The cost of the rolling the scheme forward by providing a further 20 fellowships beginning in 1987 are tiny in relation to the overall Science Budget. The costs are, however, significant as a fraction of the Royal Society's grant in aid, of which the costs of 20 fellowships represent 5%. The costs build up as follows:

		£m
1987-88	1988-89	1989-90
0.216	0.369	0.393

We recommend that the £0.216m needed in 1987-88 should come out of the remaining £4.4m. The costs in the later years will be a first charge on the ABRC's flexibility margin for those years.

Under-indexation of salary increases

21. Paragraph 3 above noted that all the Science Budget bodies will have to absorb increases in wages and salaries costs flowing from actual and expected pay settlements in 1986-87. The total additional annual recurrent cost on this account approaches £9m. All Science Budget bodies are affected. We accordingly recommend that the remaining £4.184m be distributed to bodies pro rata to their staff related expenditure to help them meet some of the additional costs in 1987-88. Thereafter, since the new money provided falls by £4m, Science Budget bodies will have to absorb all the additional costs of the 1986-87 pay settlements at the expense of existing provision.

22. Our recommendations for allocation of the new funds as explained in paragraph 13 to 21 are summarised in Table 3 (page 11).

Flexibility Margin

23. In our advice last year we recommended, and your predecessor accepted, that the ABRC's flexibility margin should be £12.7m in 1988-89 and £17.7m in 1989-90. We recommend that these figures, representing respectively some 2% and 2.5% of

the total Science Budget in those years, be maintained; and that in the longer term the flexibility margin should not fall below 2%-2.5% of the Science Budget. The margin gives the ABRC essential flexibility for facilitating shifts in the distribution of Science Budget funds between bodies to reflect changing priorities. If all Science Budget funds are allocated to bodies up to 3 years ahead, it very much reduces the Board's ability to recommend changes in the distribution without seriously disrupting bodies' plans and commitments.

24. The margin was first introduced in December 1984 for application in financial year 1986-87. In the first two years of its existence, the Board has become concerned that the margin has in practice not operated as intended. Instead of facilitating planned strategic adjustments in the balance of funding, it has drawn the Board into considering numerous small bids, at a level of detail which should properly be left entirely to the discretion of individual bodies. The Board has therefore thought it timely to reformulate the objects of the margin to underline its strategic purpose; and to revise procedures so that instead of, as now, distributing the margin only months before the financial year in question, henceforward the allocation of the margin will largely be planned between 3 and 5 years in advance. Our revised objectives are:

i) to help bring about planned shifts of resources between funded bodies by providing financial assistance for restructuring. Restructuring may arise either at the initiative of the ABRC or of the bodies themselves;

ii) to assist in funding 'lumpy' capital expenditure by incorporating a 5-year rolling Science Budget major capital expenditure plan covering all capital items over a certain money value. Each capital project would be funded to an appropriate extent by the funded body, the proportion being determined case-by-case;

iii) to provide assistance, up to a maximum of 50% of the total cost, to funded bodies for unforeseen opportunities so that bodies can take advantage of these opportunities more rapidly than otherwise would be possible from within their budgets;

iv) to provide assistance, up to a maximum of 50% of the total cost, for collaborative projects over and above the level possible from the collaborators' own budgets.

The Board will presently be consulting bodies about procedures for operating the margin in line with these revised objectives.

Table 3

1986 PES: RECOMMENDED ALLOCATION OF ADDITIONAL FUNDS

		1987-88	1988-89	1989-90
A	Additional funds	24.0	20.0	20.0
B	Unallocated sum in ABRC Flexibility Margin	0.9	-	-
	Sub-total of (A) and (B)	24.9		
	Recommended Allocation:			
(1)	International subscriptions; increases due to exchange rate movements			
	SERC	20.0	20.0[a]	
	MRC	0.5		
(2)	University Research Fellowships scheme	0.216	0.369[b]	0.393[b]
	Sub-total of (1) & (2)	20.716	20.369	0.393
(3)	Part compensation for costs of 1986 pay settlements (pro rata distribution of remaining sum (£4.184m) between bodies)			
	AFRC	0.505		
	ESRC	0.207		
	MRC	1.200		
	NERC	0.503		
	SERC	1.558		
	BM(NH)	0.153		
	Royal Society	0.056		
	Fellowship of Engineering	0.002		
		4.184		
(4)	Unallocated sums	-	-	20.0[c]
	Total	24.9	20.369	20.393

Notes (a) Subject to review (downwards only) in the light of further exchange rate movements

(b) Costs to be met from ABRC flexibility margin

(c) Held in reserve (see paragraph 17)

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FROM THE SECRETARY OF STATE

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10 February 1987

1986 PUBLIC EXPENDITURE SETTLEMENT: SCIENCE BUDGET ALLOCATIONS

Thank you for your letter of 3 December 1986 and the ABRC's advice on the distribution of the Science Budget.

I am happy to accept the Board's advice on the allocations to funded bodies for 1987-88, and on planning figures for 1988-89 and 1989-90. As you know, since the Board submitted its advice, I have made available an extra £1m per annum to enable the Medical Research Council (MRC) to increase its research on AIDS, and the MRC allocations will therefore reflect this additional sum.

I note the concern you express in paragraph 12 of the Board's advice, and your intention to address in a consultative strategy document what you see as the consequences for the science base of the Government's financial decisions. I look forward to receiving this document in due course.

I am content that the Board's advice should be published.