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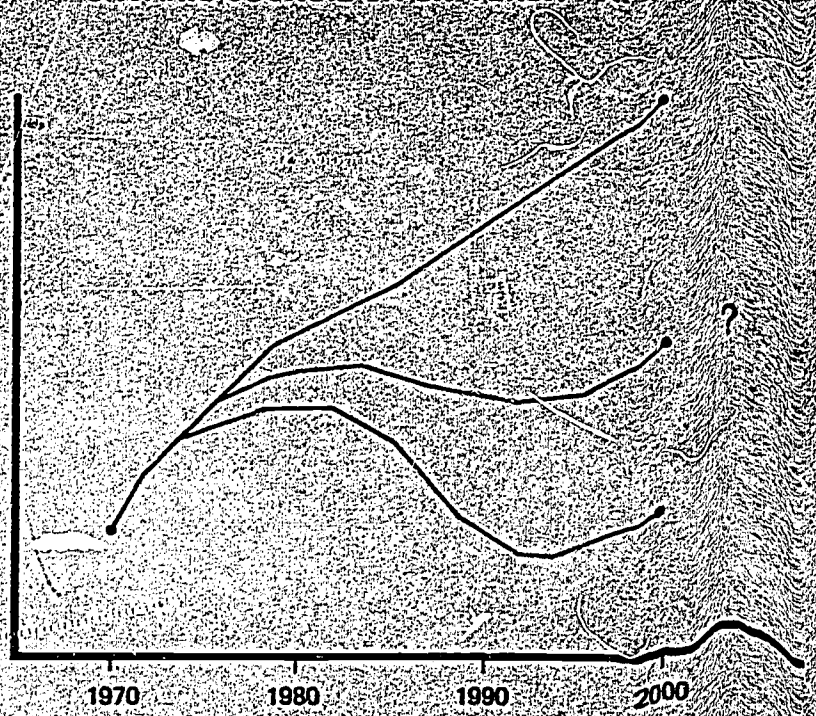
ABSTRACT

Statistical data and commentary are offered on recent enrollment and funding experiences, as well as government and university objectives. Levels of service and quality are reported in terms of career development of highly qualified manpower, equipment and furniture, and research. Enrollment projections for 1977-78 and beyond are presented, including implications for steady state and growing institutions, effects of enrollment averaging, and planning. Trends in inflation and indicators of university support are also discussed, along with recommendations for increases in system operating income for 1977-78. (LBH)

BRIEF TO THE
ONTARIO COUNCIL ON UNIVERSITY AFFAIRS



APPROACH TO THE EIGHTIES: DEMAND/QUALITY/RESOURCES

Prepared by the
COU Committee on Operating Grants

Council of Ontario Universities
Conseil des Universités de l'Ontario
130 St. George Street, Suite 8039
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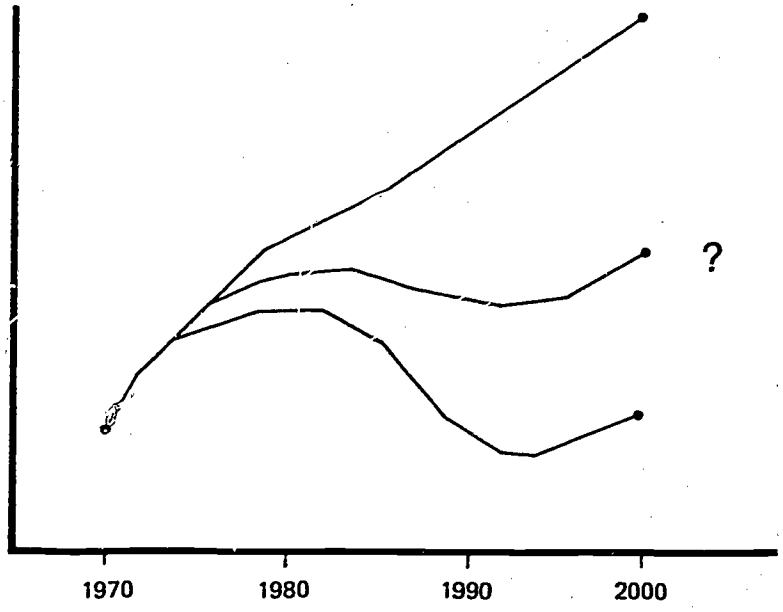

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3

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Index

Summary of Recommendations

1. Under the assumptions made, total increase in operating income to universities in 1977-78 should be at a minimum $87.3 million, an increase of 11.3%. (Table 18, p. 59)

2. OCUA should give further study to our earlier model (in Equity for Ontario's Universities), the "Connell" suggestion from the University of Toronto and any other models designed to separate fixed and semi-fixed costs from variable costs, and to decouple the former types of costs from enrolment growth in determining universities' formula grants (p. 50)

3. Maintenance of supply of highly qualified manpower to staff the province's universities should become a government and university objective. (p. 8)

4. As a minimum, the staffing pattern which assumes a 1% per annum increase in faculty numbers through 1983-84 (Model 3) should be adopted as policy. (p. 17)

5. A pilot study of a sample of representative universities should be mounted to collect and analyse the appropriate data on the values, age, and reasonable replacement requirements of the furnishings and

equipment assets, including those acquired from research grants. (p. 22)

6. i) Laurentian and Lakehead Universities continue and expand their programmes tailored to respond to the needs of the population they serve.

ii) OCUA consider the advisability of recommending provincial subsidization of residence and transportation costs for Laurentian and Lakehead students, as a means of utilizing to the full the potential of those institutions, overcoming their comparative isolation from the rest of the Ontario system, and furthering the implementation of the policy of decentralized accessibility which OCUA has already promoted through its Northern Grants. (p.52)

SECTION 1

BACKGROUND

1.1 Recent Enrolment and Funding Experience

Over the past few years, the Committee on Operating Grants has called to government's attention the deteriorating condition of Ontario's university system arising from the inadequate amount of provincial funds made available. We are pleased to comment that with a somewhat more generous level for 1976-77 within a framework of controlled inflation, the downward trend in the financial position of universities appears to have been halted at least for one year.

This brief contains estimates of our operating needs for 1977-78. It should be made very clear, however, that along with OCUA we are assuming that the current federal anti-inflation programme will still be operating in 1977-78; its success is inherent in our funding recommendations. Should inflation exceed the guidelines, our estimates of need will be inadequate.

In February, the Minister of Colleges and Universities announced the preliminary operating grants for 1976-77. The grants were allocated according to the recommendations of OCUA. As reported by MCU, the BIU value was raised from $2,108 to $2,312, an increase of 9.5%, and the Basic Operating Income increased by 15%.

On OCUA's advice, the formula for distributing the grants has been changed to reflect the following:

1) In order to desensitize undergraduate enrolment fluctuations, the concept of enrolment averaging was introduced. One third of the eligible undergraduate BIUs for 1974-75 and two thirds of 1975-76 generated the undergraduate BIUs for 1976-77. This format is to be used in 1977-78 with one third of the eligible BIUs for 1974-75, 1975-76, and 1976-77 generating the undergraduate BIUs. It is still an open question as to the number of years that will be used beyond 1977-78 for enrolment averaging.

2) In an earlier Advisory Memorandum (75-V), OCUA recommended the suspension of graduate funding by the formula. With government's acceptance of the recommendation which is in effect for both 1976-77 and 1977-78, OCUA has created Graduate Funding Units. These graduate units are equal to the number of eligible 1975-76 graduate BIUs. In short, no funds will be tied to graduate enrolments during the period of suspension and increases will be given in relation to economic inflationary considerations.

The funding announcement also included an increase for Bilingualism Grants with funds totalling $3.85 million; a rationale which legitimized Northern Grants and will adjust such grants in relation to percentage changes in Basic Operating Income (Northern Grants totalled $2.54

million); supplementary grants to Lakehead, Laurentian, and Trent totalling $3.4 million; a terminal supplementary grant to Brock of $100,000; and in keeping with its announced intent to reduce such grants, eliminated supplementary grants to Carleton, Windsor and York.

The changes instituted by OCUA to the formula funding mechanism produced an artificially inflated value for the BIU since fewer eligible BIUs were used. Had the formula remained unchanged the BIU value would have been about $2,281 representing an increase of 8.1% instead of the announced increase of 9.5% (see Table 1). Also, it should be noted that with fees income increasing at a lesser rate and with non-formula grants actually declining by almost 20%, the overall increase in total grants and fees per student was only 6.1%.

Table 2 shows the historical record from 1968-69 to 1976-77 of growth in BIUs, the BIU value and Basic Operating Income. However, it should be noted that changes in the formula make it more and more difficult to make valid comparisons from year to year. Enrolment averaging and the slip-year concept which were instituted both to help the universities make realistic budgets and to guard against enrolment fluctuations do not confront the problem of how many provincial dollars are available to educate students during a given academic year.

Table 1

Derivation of 1976-77 Undergraduate BIU Value

Enrolment (FTE)	1974-75	Actual 1975-76	Increase Amount	Increase %
Undergraduate	162,850.7	173,881.9	11,031.2	6.8
Graduate	16,367.9	17,255.4	887.5	5.4
Total	179,218.6	191,137.3	11,918.7	6.7
Basic Income Units				
Undergraduate	242,918.7	259,760.6	16,841.9	6.9
Graduate	62,047.9	63,876.5	1,828.6	2.9
Total	204,966.6	323,637.1	18,670.5	6.1
BIU/FTE Ratio				
Undergraduate	1.49	1.49		
Graduate	3.79	3.70		
Total	1.70	1.69		
Formula Grants	1975-76 ($ millions)	1976-77 ($ millions)		
Undergraduate	420.1	493.0	72.9	17.4
Graduate	118.3	134.2	15.9	13.4
Total	538.4	627.2	88.8	16.5
Formula Fees				
Undergraduate	92.7	97.4	4.7	5.1
Graduate	12.7	13.7	1.0	7.9
Total	105.4	111.1	5.7	5.4
Basic Operating Income				
Undergraduate	512.8	590.4	77.6	15.1
Graduate	131.0	147.9	16.9	12.9
Total	643.8	738.3	94.5	14.7
Non-Formula Grants				
Supplementary	14.9	10.3	-4.6	-30.9
Line Item	14.8	13.5	-1.3	- 8.8
Total	29.7	23.8	-5.9	-19.9
Total Grants & Formula Fees	673.5	762.1	88.6	13.2
BIU Value	$	$	$	
Undergraduate	2,111	2,273	162	7.7
Graduate	2,111	2,315	204	9.7
Graduate & Undergraduate	2,111	2,281	170	8.1
Total Grants & Formula Fees per FTE Student	3,758	3,987	229	6.1

Note: The institutions included in the BOI analysis are all universities plus Ryerson and OISE; OCA and theological institutions are omitted. FTE enrolment, BIU and formula fees for 1974-75 are taken from the MCU print-out of 1974-75 final actuals, March 26, 1975.

FTE enrolment, BIU and formula fees for 1975-76 are taken from the MCU print-out of 1975-76 actuals, revised April 3, 1976. The undergraduate BIU and graduate GFU values are derived by dividing their respective BOI by the 1975-76 BIUs. The $43 differential in values reflects the estimated $1.3 million cost savings associated with the recommended graduate funding. The undergraduate BIU value of $2,273 does not incorporate enrolment averaging of undergraduate BIUs.

Supplementary and line item grants information for 1975-76 was taken from Table A-3, p. 39 of OCUA Advisory Memorandum 75-VI adjusted by additional information from MCU. The information for these types of grants plus Theology and Contingency for 1976-77 were taken from the Minister's letter of December 12, 1975 and from Table III, p. 31 of OCUA Advisory Memorandum 75-VII.

:tk
May 3, 1976.

Table 2

Year	Increase in # of BIU's (%)	Increase in Value of BIU (%)	Increase in Basic Operating Income
1968-69	19.2	9.8	30.9
1969-70	18.5	5.5	25.0
1970-71	11.4	6.0	18.1
1971-72	11.4	4.8	16.7
1972-73	3.3	2.0	5.4
1973-74	1.1	3.4	6.8[1]
1974-75	5.9	7.1	8.3
1975-76	6.1	7.8	14.2
1976-77	4.5[2]	8.1[3]	14.7

1. Introduction of the slip year where present year funding is based on previous year's enrolment.
2. Estimate.
3. Based on enrolment averaging effects.

A recent publication by COU attempted to gain some insight into this problem by using a measure of operating grants per full-time equivalent student.* The study also compared this measure for all of the provinces in Canada. Table 3 presents the findings which led to the conclusion that even though Ontario contributed the greatest total amount of funds, the level of support per student has decreased dramatically since 1971-72.

* A Comparison of Provincial Contributions to Canadian Universities, COU, March, 1976.

Ontario's rank order position in 1971-72 showed the province to be third and above the national average, but by 1974-75 Ontario had slipped below the national average and held a rank position of seven. Other preliminary data for future years showed no improvement for Ontario and seemed to indicate further decline. At the present time, it is difficult to ascertain the effects of 1976-77 operating grants on this measure. We suspect the level of announced support may check the decreasing position of Ontario in relation to the other provinces but do not believe it has improved Ontario's relative standing. The impact of enrolment increases in Ontario for 1976-77 is hard to measure, and, as we will elaborate later in this brief, the demand for admission into universities is running ahead of the growth in the 18-24 year old age group. A significant increase in students would of course erode much of the gains made through the 1976-77 operating grants increase.

Table 3

PROVINCIAL GRANTS TO OPERATING REVENUE PER FTE STUDENT (1971-74)*

	1971-72	Rank	1972-73	Rank	1973-74	Rank	1974-75[1]	Rank
Newfoundland	$2,246	7	$2,547	5	$3,208	2	$4,090	1
Prince Edward Island	1,651	9	1,973	9	2,187	10	2,718	10
Nova Scotia	2,218	8	2,200	8	2,393	8	2,889	9
New Brunswick	691	10	1,889	10	2,344	9	3,092	6
Quebec	2,447	6	2,562	4	2,815	5	3,300	4
Ontario	2,649	3	2,742	3	2,809	6	3,026	7
Manitoba	2,459	5	2,286	7	2,705	7	3,189	5
Saskatchewan	2,571	4	2,535	6	2,853	4	2,951	8
Alberta	3,257	2	3,046	2	3,179	3	3,370	3
British Columbia	3,311	1	3,297	1	3,382	1	3,652	2
Canada	$2,594		$2,678		$2,854		$3,185	

* A Comparison of Provincial Contributions to Canadian Universities, COU, March, 1976.

1. Using preliminary data from Statistics Canada.

1.2 Government and University Objectives

We endorse OCUA's recommendations 75-10 and 75-11 with respect to offsetting inflationary trends, maintaining existing levels of service, accommodating predicted enrolment increases at the undergraduate level, and recognizing the need for financial viability in the university system. We have no wish to add to the abundant rhetoric on existing government and university objectives except to observe that when there have been insufficient funds to satisfy all objectives the universities have chosen to protect human resources, i.e., they have chosen in order of priority to (1) offset inflationary trends in salaries and wages; (2) accommodate predicted enrolment increases because (a) it was socially responsible and (b) it provided a portion of the wherewithal to meet inflationary trends; (3) maintain financial viability (high levels of deficit financing are frowned on in universities); and (4) maintain existing levels of service on the non-human resource items. In this priority system, the latter were bound to suffer, as the record clearly shows. This pattern can be expected under any conditions where increasing enrolment demand continues to be met despite insufficient funds.

Most of the evidence so far suggests that level of service has been affected most severely in the expenditure categories of libraries, equipment and furniture, renovations and alterations. OCUA took account of this in its recommendation of an additional $4.1 million to meet existing service level costs in the Non-Salaries category in 1976-77.

In Equity for Ontario's Universities we added our own important objective of "maintaining equitable salary levels for university personnel". This remains an important objective but we assume that the peer group differentials are now more or less frozen for the duration of the AIB. Another more recent university objective arises out of the joint COU/OCUFA study, Academic Career Planning: The Ivory Tower and the Crystal Ball. This objective is designed to ensure that the business of the university, teaching and research, is not compromised unduly by insufficient funding. The quality of the university lies in its teaching and research. Marginal adjustments may be made over time to important service indices (e.g. student/staff ratios) but if care is not taken to plan academic resources for the future we may be destined to repeat the hiring patterns of the sixties which had unfortunate results - as is shown in the aforementioned study. There is increasing evidence that universities are making more and more use of contractually limited staff to replace attritions and to meet new needs. While this is understandable from the viewpoint of flexibility, a long-term plan built on this produces an abnormal distribution of another, even worse, kind (see Model 1 of the above-referenced report). To the list of objectives already discussed, we recommend that:

Maintenance of supply of highly qualified manpower to staff the province's universities should become a government and university objective.

SECTION 2

LEVELS OF SERVICE AND QUALITY

2.1 Career Development of Highly Qualified Manpower

The report Academic Career Planning: The Ivory Tower and the Crystal Ball forwarded to OCUA under separate cover contains four possible models of the age-salary profiles of faculty in Ontario universities over the period 1973-74 through 1998-99. The four models were chosen to show the impacts of various staffing policy decisions on numbers of staff, average salary, total salaries, student/faculty ratios and ratios of salaries expenditures to total expenditures. Career progress factors assumed for all of the models are 3% per annum for the first twenty-five years of a career, 1.7% per annum for the next ten years and zero percent for the last five. This produces a final salary after thirty-five years, approximately 2.47 times entry-level salary.

Figures 1, 2, 3 and 4 are graphic depictions of the four models. In each case the first histogram on the left shows the 1973-74 distribution of faculty by age group. As time progresses the combined effects of retirements, attritions, career progress and staffing policies interact to produce changes in the age group distributions.

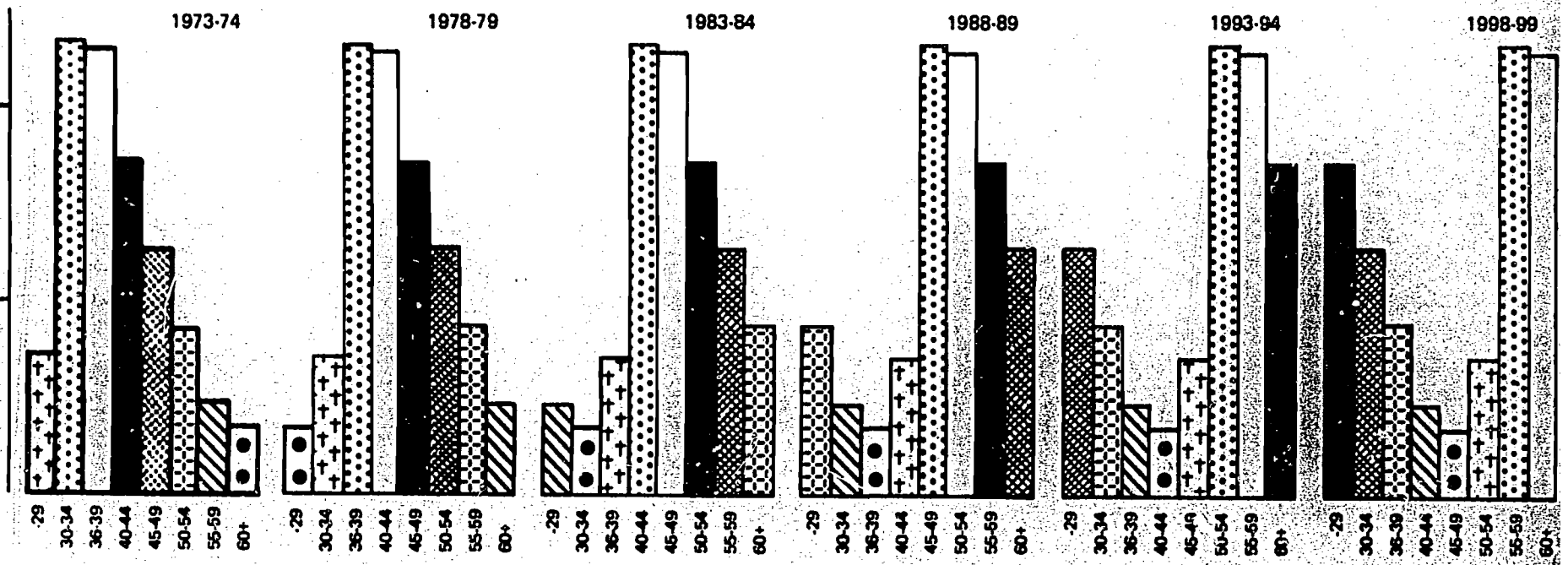
Model 1 holds faculty constant by staffing only to replace retirement. Model 2 assumes certain attrition rates (5% per annum in the two lowest

Figure 1

Age-Salary Profile of Faculty in Ontario Universities

(No Change in Total Number of Faculty – Replacement for Retirement only)

MODEL NO. 1

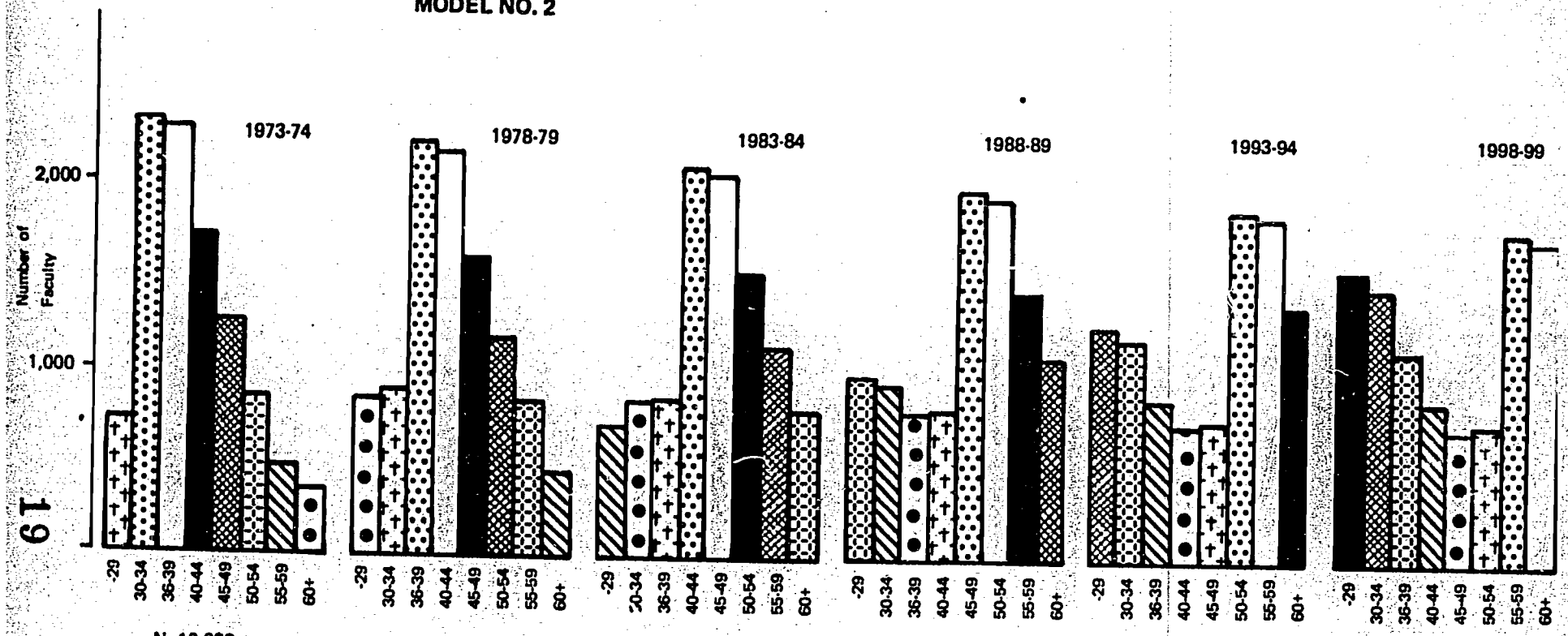


	1973-74	1978-79	1983-84	1988-89	1993-94	1998-99
	N=10,038	N=10,038	N=10,038	N=10,038	N=10,038	N=10,038
No. of Faculty	10,038	10,038	10,038	10,038	10,038	10,038
Avg. Salary	19,235	21,502	23,635	25,046	25,253	24,027
Total Salaries	193.1	215.8	237.2	251.4	253.5	241.2
Student/Faculty Ratio	15.4	17.1	18.9	17.5	16.2	18.4
Total Salaries/ 1973-74 Funding	.367	.410	.450	.477	.481	.457

Age-Salary Profile of Faculty in Ontario Universities

(No Change in Total Number of Faculty – Replacement for Retirement & Attrition Only)

MODEL NO. 2



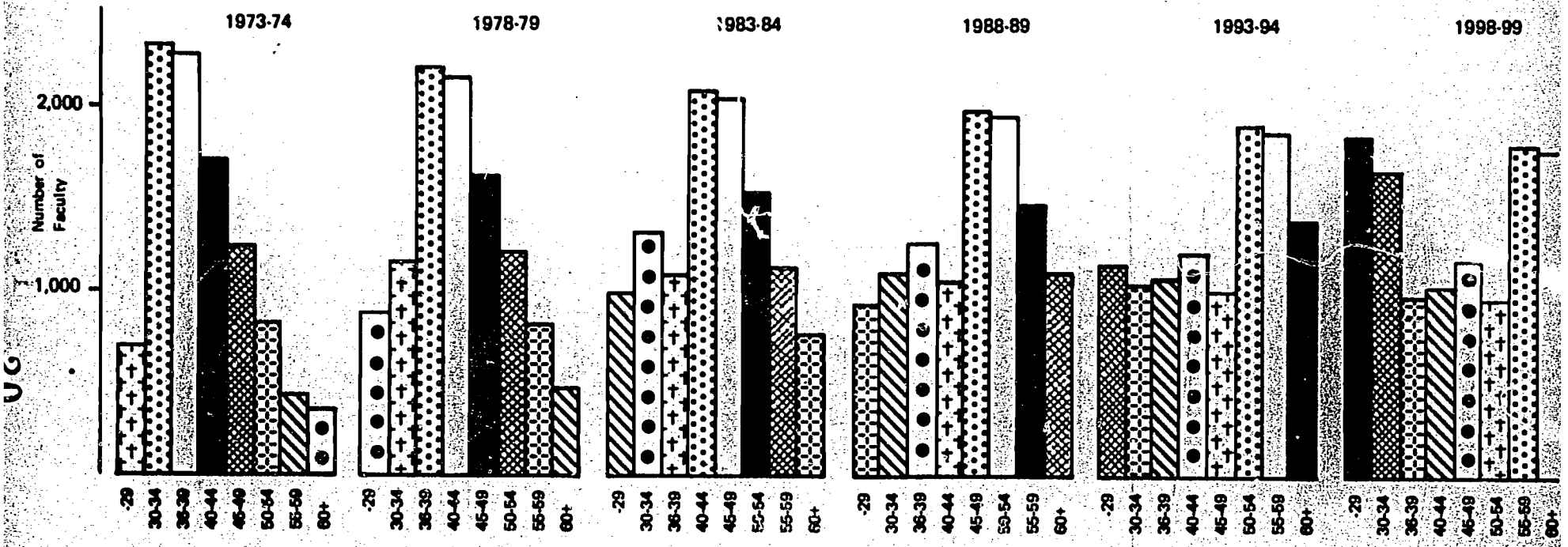
	1973-74	1978-79	1983-84	1988-89	1993-94	1998-99
	N=10,038	N=10,038	N=10,038	N=10,038	N=10,038	N=10,038
No. of Faculty	10038	10038	10038	10038	10038	10038
Avg. Salary	19,235	21,111	22,773	23,758	23,794	22,874
Total Salaries	193.1	211.9	228.5	238.5	238.8	229.1
Student/Faculty Ratio	15.4	17.1	18.9	17.5	16.2	18.4
Total Salaries/ 1973-74 Funding	.367	.402	.434	.452	.454	.435

* MODEL No.2 – Attrition (excl. retirements) occurs in all periods at rate of 5%/annum in two lowest age groups and 1%/annum in all other age groups.

Figure 3

Age-Salary Profile of Faculty in Ontario Universities

MODEL NO. 3*



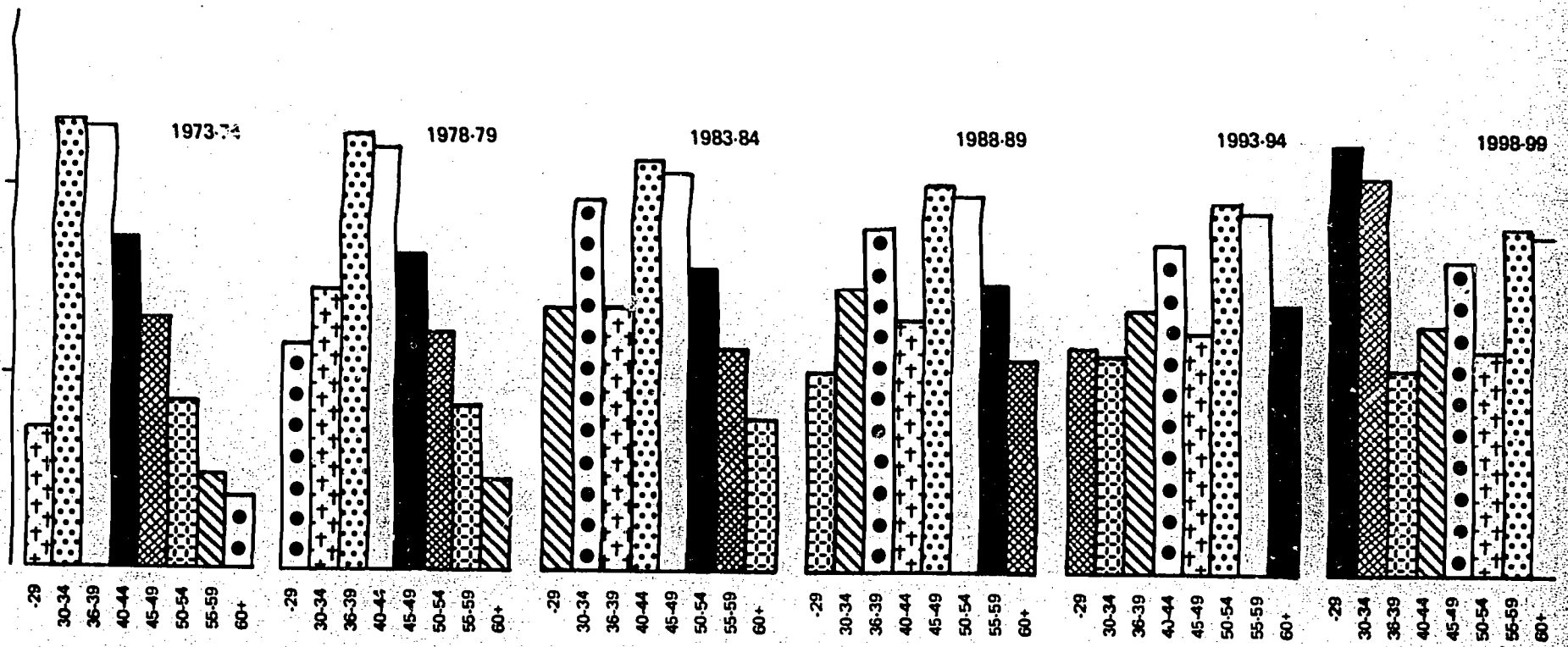
	1973-74	1978-79	1983-84	1988-89	1993-94	1998-99
	N=10,038	N=10,038	N=10,038	N=10,038	N=10,038	N=10,038
No. of Faculty	10,038	10,549	11,088	10,857	10,524	11,092
Aug. Salary	19,235	20,770	22,039	23,330	23,852	22,646
Total Salaries	193.1	219.1	244.4	253.3	251.0	251.2
Student/Faculty Ratio	15.4	16.2	17.0	16.1	15.4	16.6
Total Salaries/ 1973-74 Funding	.367	.416	.464	.481	.477	.477

* MODEL No.3 – Number of Faculty increases at rate of 1%/annum in periods 1973–74 to 1983–84 and 1993–94 to 1998–99. During period 1983–84 to 1993–94, Number of Faculty decreases as a result of replacing only 70% of retirees.
– Attrition (excl. retirements) occurs in all periods at rate of 5%/annum in two lowest age groups and 1%/annum in all other age groups.

Figure 4

Age Salary Profile of Faculty in Ontario Universities

MODEL NO. 4*



	1973-74	1978-79	1983-84	1988-89	1993-94	1998-99
	N=10,038	N=11,084	N=12,235	N=12,001	N=11,677	N=12,897
No. of Faculty	10,038	11,084	12,235	12,001	11,677	12,897
Avg. Salary	19,235	20,445	21,378	22,740	23,423	22,169
Total Salaries	193.1	226.6	261.6	272.9	273.5	285.9
Student/Faculty Ratio	16.4	15.4	15.4	14.6	13.9	14.2
Total Salaries/ 1973-74 Funding	.367	.430	.496	.518	.519	.543

* MODEL No.4 – Number of Faculty increases at rate of 2%/annum in periods 1973–74 to 1983–84 and 1993–94 to 1998–99. During period 1983–84 to 1993–94 Number of Faculty decreased as a result of replacing only 70% of retirees.
– Attrition (excl. retirements) occurs in all periods at rate of 5%/annum in two lower age groups and 1%/annum in all other age groups.

age groups, and 1% per annum in the other age groups) and replaces these attritions in addition to retirements. Model 3 assumes that the number of faculty increases at a rate of 1% per annum for the periods 1973-74 to 1983-84 and 1993-94 to 1998-99 and that during the period 1983-84 to 1993-94 the number of faculty decreases as a result of replacing only 70% of retirees. Attrition rates and retirement rates are the same as those of Model 2. Model 4 is the same as Model 3 except that faculty members are assumed to increase at the rate of 2% per annum rather than 1%.

The models show what happens to average and total salaries and to the ratio of total salaries to total expenditures ($19,235, $193.1 million and 0.367 respectively in 1973-74) given certain policy decisions over the chosen time period. The report does not however, cost the models and show what additional funds will be required to sustain the models. The key variable is the ratio of total salaries to total expenditures shown as 0.367 in 1973-74. Total salaries were $193.1 million; total expenditures were $526.2 million. Holding total expenditures constant causes the ratio to rise to different peak levels at different years for each model; in Model 1 to 0.481 in 1993-94, in Model 2 to 0.454 in the same year, in Model 3 to 0.481 in 1988-89, and in Model 4 to 0.543 in 1998-99. What ratio is possible?

The COFO-UO data show that this ratio for the system rose from 0.370 in 1970-71 to 0.378 in 1974-75. During this same period universities were forced to divert resources from non-salary accounts. We will assume for this analysis that this ratio has reached its maximum level. Table 4 below details the costing of the models.

The first row of Table 4 shows the assumed ratios of academic salaries to total expenditures. Row 4 values for total budgets required for each model, given these ratios, are then computed. The average annual increases for each five year period are then derived.

Table 4

Derivation of Total and Average Annual Increases to Support Academic Career Development 1978 - 1998

	1978-79	1983-84	1988-89	1993-94	1998-99
1. Assumed Ratio of Academic Salaries to Total Expenditures	0.378	0.378	0.378	0.378	0.378
2. Total Budget related to Assumed Ratio (Constant Dollars)	$m 526.2	$m 526.2	$m 526.2	$m 526.2	$m 526.2
3. Model Ratios					
3.1 Model 1	0.410	0.450	0.477	0.481	0.457
3.2 Model 2	0.402	0.434	0.452	0.454	0.435
3.3 Model 3	0.416	0.464	0.481	0.477	0.477
3.4 Model 4	0.430	0.496	0.518	0.519	0.543
4. Total Budget Required to Achieve Assumed Ratio	$m	$m	$m	$m	$m
4.1 Model 1	570.8	626.4	664.0	669.6	636.2
4.2 Model 2	559.6	604.2	629.2	632.0	605.5
4.3 Model 3	579.1	645.9	669.6	664.0	664.0
4.4 Model 4	598.6	690.5	721.1	722.5	755.9

5. Average Increase/Year	$m	%	$m	%	$m	%	$m	%	$m	%
6.1 Model 1	8.9	1.6	11.1	1.9	7.5	1.2	1.1	0.2	-6.7	-1.0
6.2 Model 2	6.7	1.2	8.9	1.5	5.0	0.8	0.6	0.1	-5.3	-0.8
6.3 Model 3	10.6	1.9	13.4	2.2	4.7	0.7	-1.1	-0.2	0	0
6.4 Model 4	14.5	2.6	18.4	2.9	6.1	0.9	0.3	0.04	6.7	0.9

The ideal distribution is rectangular; of the four models Model 3 approaches the ideal most closely. While it is more costly than Models 1 or 2 it provides for some additional hiring (over and above replacement of retirements and attrition) of about 1,000 faculty absorbing a larger portion of the output of Canada's graduate schools. Also, Model 3 shows productivity improvement; the FTE student/FT faculty ratio increases from 15.4 to 16.6 overall. During the early growth period it increases to 17, declines to the 1973-74 level of 15.4 in 1993-94 before increasing to 16.6 at the turn of the century.

Assuming no increase in staff and replacement of retirement and attrition only (model 2), for the next two years through 1978-79 about $6.7 million additional income per year (in 1973-74 dollars) is required to sustain academic career development, about 1.24% per year. For the following quinquennum about 1.5% per year would be required. The requirement drops to 0.8% per annum for the period 1983-88. From then on retirements and other outflows provide sufficient funds to make academic career progress self-funding with some funds left over for other purposes.

It should be noted that all models assume changes in enrolment related to Zsigmond's demographic projections for Statistics Canada. A 2% per annum increase is assumed through 1983. A decrease of 1.5% per annum is assumed for the period 1984-93. An increase of 2.5% per annum is

assumed for the period 1993-98. If actual enrolment were to match these projections we would favour a policy similar to Model 3. However, we believe the enrolment curve will be somewhat steeper than reflected in these figures and that the cycles will not be so pronounced. Recent experience of enrolment increases of 5% or more support this. If enrolment growth is actually greater than the current demographic projections show, additional university resources will be required beyond that implied in Model 3. Our funding recommendations for 1977-78 make provisions for this. We recommend that:

As a minimum, the staffing pattern which assumes a one percent per annum increase in faculty numbers through 1983-84 (Model 3) should be adopted as a policy.

2.2 Equipment and Furniture

The Introduction to OCUA' Second Annual Report, p. 13, shows that Council incorporated an allowance of 2.5% of total non-salary expenditures for the previous year as a proxy for the incremental cost of replacing furniture and equipment.

Lacking the 1976-77 budgets it is impossible to say whether the universities have been able to apply these funds as recommended. We suspect that some institutions will find the 2.5% allowance elusive, for the following reasons. OCUA has recognized the fact that we look back on a history of starvation in these areas. Table 5 presents a five-year display of the percentage of total resources in Ontario universities spent, by "object of expense". From this table we can see that the percentage share changes from 1970-71 to 1974-75 are as follows: salaries and wages (2.0%), fringe benefits (20.7%), utilities (13.0%), taxes (57.1%) and scholarships (200%). These increases have occurred at the expense of four budget items: books and periodicals (-20.7%), purchase and rental of furniture and equipment (-27.1%), renovations and alterations (-46.7%) and miscellaneous (-25.0%).

This schedule substantiates the observation that, over the period, the universities have been forced to engage in capital consumption as a means

Table 5

Percentage Analysis of Operating Expenses Total All Universities
1970-71 to 1974-75

Operating Expense by Object of Expense	12 Mos. 1970-71 %	10 Mos. 1971-72 %	12 Mos. 1972-73 %	12 Mos. 1973-74 %	12 Mos. 1974-75 %	% Change 1970-71 through 1974-75 %
Salaries & Wages--						
Academic ranks	37.0	36.9	38.7	38.5	37.8	2.2
Other instruction and research	4.5	5.1	4.1	4.3	4.6	2.2
Other salaries & wages	28.6	28.3	29.4	29.2	29.1	1.7
Total Salaries and Wages	70.1	70.3	72.2	71.9	71.5	2.0
Fringe Benefits	5.8	6.2	6.7	6.8	7.0	20.7
Total Salaries and Benefits	75.9	76.5	78.9	78.7	78.5	3.4
Books and periodicals	2.9	2.9	2.5	2.4	2.3	(20.7)
Furniture and Equipment--						
Purchase	3.2	3.3	2.2	2.0	2.1	(34.4)
Rental	1.6	1.5	1.6	1.6	1.4	(12.5)
Operational Supplies and expenses	7.2	7.2	6.3	6.2	7.2	-0-
Utilities	3.0	3.3	3.3	3.3	3.4	13.3
Taxes	0.7	0.7	0.7	1.2	1.1	57.1
Renovations and alterations	1.5	1.0	1.0	1.0	0.8	(46.7)
Externally contracted services	0.8	0.8	1.0	1.1	0.9	12.5
Scholarships, bursaries, etc.	0.2	0.3	0.4	0.5	0.6	200.0
Principal and interest payments	0.2	0.1	0.1	0.1	0.1	(50.0)
Miscellaneous	3.6	3.2	3.0	2.7	2.7	(25.0)
Internal Cost allocations	-0.8	-0.8	-1.0	-0.9	-1.1	(37.5)
TOTAL	100.0	100.0	100.0	100.0	100.0	

of financing compensation levels and paying for energy and taxes. The funding level for 1976-77 proposed by Council has been supported by the government. Given the limitations placed on compensation improvement increases by the Anti-Inflation Board, it would appear that 1976-77 will be the first year in which universities should be able to allocate resources to maintain the non-salary components of their budgets, but only at the depressed levels that have resulted from a succession of lean years.

In attempting to answer OCUA's questions about the method and the magnitude of its recommendation regarding furniture and equipment, we find several difficulties. There are no data available on the values and ages of the universities' library books, equipment and furnishings.

Some insight is provided by the rapid decrease in levels of service and quality in university libraries. Through data provided by the Ontario Council of University Libraries, we find that the 1975-76 expenditure per student for book and periodical acquisitions is actually below the 1971-72 level. When inflation is applied against this state of affairs at a very conservative level of 12%* per annum, the original purchasing power of $87.62 per student in 1971-72 has decreased to $51.76 by 1975-76 (see Table 6). Using the same inflation

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* The 12% inflation rate assumed here is a modest figure. The price of American periodicals has risen 121% in seven years and rose 13% in 1975 (Library Journal vol. 10, no. 13, p. 1291). The price of American hardcover books has risen 92% in eight years and 15% in 1975 (Publishers Weekly, vol. 209, no. 6, p. 57). Library Association Record (vol. 77, no. 8, p. 189) shows that British journals rose 20.3% in 1975, and other journals by 17.4%.

Table 6

Erosion of the Purchasing Power of Dollars Spent on Ontario University Library Acquisitions*

	1971-72	1972-73	1973-74	1974-75	1975-76
Total System Funds in $000	$11,048	$12,088	$12,386	$13,349	$12,549 (est)
Purchasing Power in $000	11,048	10,772	9,750	9,340	7,666
Average Expenditure per Student[2]	$87.62	$88.48	$88.79	$91.02	$86.44
Purchasing Power	87.62	77.98	68.93	62.38	51.76

* Wilfrid Laurier omitted due to change from private to provincial status.

Sources: 1. COFO-UO reports for book and periodical expenditures.
2. OCUL Study, 1976.

rate against the total dollars expended on books and periodicals by the system, the $11 million in 1971-72 has eroded to $7.7 million.

Other kinds of teaching and research equipment are often assumed to have a life expectancy of ten to twelve years on average; if this is so, we are already close to a stage of major replacements of the equipment that was newly purchased in the early 1960's in all universities, in addition to the needs of the older institutions whose inventory dates further back. The Natural Science Faculty at the University of Western

Ontario has been looking at this problem recently with the results reported in Table 7. For the three years shown the estimated costs to replace 430 pieces of laboratory equipment exceeds a million dollars.

We recommend that:

A pilot study of a sample of representative universities should be mounted to collect and analyse the appropriate data on the values, age, and reasonable replacement requirements of the furnishings and equipment assets, including those acquired from research grants.

Table 7

University of Western Ontario Laboratory Equipment Inventory - Replacement Schedule Natural Science Faculty (Excluding Basic Health Science Departments)

Replacement Year	No. of Items	Average Age (Years)	Estimated Cost to Replace
1977	148	11.3	$271,500
1978	140	11.0	457,500
1979	143	12.4	361,000
	431		$1,090,000

Another difficulty concerns the appropriateness of the size of allocation recommended by OCUA. This is a complex issue. OCUA's estimate of an increase of 8.0% in non-salary items was based on a 7.0% annual inflation increase, plus 2.5% increase for improvement of existing levels of service, less 1.5% decrease to allow for increased efficiency. Apparently

OCUA felt that some non-salary items would increase in price either at the inflation rate or less, so that most of the 2.5% allowed for "maintenance of existing levels of service", as well as part of the inflation allowance for non-salary items would help to finance the replacement of existing furniture and equipment.

An analysis done at the University of Toronto points to the conclusion that, despite the AIB guidelines, most items in the non-salary section are likely to exceed the 7% inflation rate and eat into the 2.5% allowed for replacement of equipment and furnishings. The supplies and equipment factors have exceeded the overall Consumer Price Index factors for several years. According to National Appraisal Consultants Limited the price of teaching and research equipment increased 20% and 17% in the fiscal years 1973-74 and 1974-75 respectively.

It has been calculated that, assuming an approximate life of just under twelve years for pieces of teaching and research equipment, its 1974-75 expenditures to replace such equipment fell short by 50% of the amount needed for adequate replacement of its aging inventory thereby falling short some two million dollars a year in the replacement of teaching and research equipment. If we assume that the University of Toronto accounts for about 25% of the Ontario system, the shortfall for the system could be in the eight million dollar range.

2.3 Research

The freeze on federal funds for university research will have the most serious repercussions on those Ontario universities which are leaders among the research-oriented institutions of Canada. We do not mention this topic with the idea that OCUA should try to persuade the Ontario Government to get the federal government off the hook in this regard. We believe that there must be a national base for Canadian research, so that the important peer review of grant applications can be performed by Council drawn from a large population base and hence internationally of the first rank; because many programmes in the sciences are too expensive to be funded on a provincial or regional basis; and because university research and scholarship provide the essential basis for the training of skilled manpower, the mounting of important national missions, and the furtherance of the cultural, intellectual and scientific development of the country as a whole.

Researchers in universities across the country are pressing Ottawa to modify the short-sighted policy of increasing governmental in-house scientific activity while starving university research, and we confidently hope they will succeed. The relevance of this topic to OCUA lies in the effect that this ill-considered freeze is having on our educational programmes.

Personnel and equipment paid for from research grants have enriched immeasurably the teaching programmes, both graduate and undergraduate, mounted by the investigators' home departments or centres. This personnel and this equipment represent highly specialized resources, whose availability to students in research-oriented universities is a very economical means of producing high-quality programmes.

In 1973-74, practically half of the Medical Research Council's expenditures (49.4%) went for the salaries of continuing technicians, and 7.1% for the stipends of trainees (MRC Newsletter, April, 1975) Continuing technical staff salaries from the National Research Council are estimated at 30% of the total grant budget, with a further 30% supporting graduate students and postdoctoral fellows (1975-76 figures). A conservative estimate of Canada Council figures places the salary support at one-sixth of the grants budget in 1975-76. From the three councils, then the current level of support for continuing skilled technical staff is approximately $40 million for Canada, which supports, in full-time equivalent figures, 3,500 - 4,000 persons, including some of the most highly trained and specialized persons in the entire labour force, with unique experience and unusual skills.

Research trainees - graduate students and postdoctoral fellows - have been supported in fairly considerable numbers, especially by NRC (1,155 scholarships and 2,870 on grants in 1975-76).

In many instances highly skilled personnel are shared between teaching and research with an appropriate portion of such person's salaries coming from the university budget and from research grants. This is a mutually beneficial arrangement but as research grant support diminishes it will put a greater burden on the university budget. It is in the best interests of all to try to retain skilled personnel.

SECTION 3

ENROLMENT PROJECTIONS

3.1 Enrolment Projections for 1977-78

As we have pointed out in previous briefs, any attempt at enrolment forecasting always runs the risk of being in error due to the numerous variables involved. The growth rate of the 18-24 year old age group has been increasing at approximately 3% per annum over the last few years while enrolments have grown over 5% per annum during the same period. In last year's brief we estimated an expected enrolment increase for 1975-76 over 1974-75 to be 4.7%. At the time we warned that the estimate might be conservative. When the actual results were tallied the growth experienced in the system had been 6.7% which was two percentage points higher or the equivalent of a 42% increase over predictions.

In making this year's prediction we have taken the following trends into consideration:

a) the growth rate in the 18-24 year old age group is again approximately 3%.

b) the latest figure from the Ontario Universities' Application Centre has led them to predict an increase of 5.4% for first year entrants.

c) no dramatic changes in the economic situation in Canada.

d) the trend since 1973-74 represents an upward change in the

participation rate of 18-24 year olds or more likely a significant increase in the entrance of students beyond 24 years of age.

e) no growth in graduate enrolments owing to the moratorium.

Table 8 represents our best estimate of expected enrolments for 1976-77 and presents the historical data for the two preceding years.

Table 8

A Prediction of Enrolment by Category for 1976-77

	Enrolments		Increases		Enrolment	Increase	
	1974-75	1975-76	#	%	1976-77	#	%
Undergraduate FTE	162,636	173,882	11,246	6.9	182,576	8,694	5.0
Graduate FTE	16,368	17,225	857	5.2	17,225	-0-	0.0
Total FTE	179,004	191,107	12,133	6.8	199,801	8,694	4.5

Source: 1974-75 and 1975-76 data provided by the Statistical Services Branch, MCU.

3.2 Enrolment Projections Beyond 1977-78

In the introduction to its Second Annual Report, OCUA drew attention to changes that are expected in the 18-24 age group in the next fifteen years. The projections from the 1971 Census indicate that the size of this age group will grow 7% between 1978 and 1983 and then decrease 16% between 1983 and 1992.* Even though OCUA recognizes that the size of the 18-24 age group is "hardly the sole determinant of the future of the university system", it points out that this age group has traditionally accounted for some four-fifths of full-time university students.

Speculating too far into the future is a dangerous proposition recognizing the present difficulties of simply looking ahead one year. Currently there are insufficient data in the Ontario system to be able to ascertain (1) the actual participation ratio of Grade 13 graduates in universities; (2) the chronological age configuration of present enrolments; (3) the upper limit of university participation rates from the 18-24 age group; (4) the government's accessibility policy translated into increased student demand; (5) the requirements for highly qualified manpower in the province or the level of market demand for such; (6) enhanced or decreased social preferences for higher education as a

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* Statistics Canada assumes a fertility rate of 1.8 and a net annual migration of 65,200(+) for Ontario.

path to upward social mobility, or (7) the future level of demand for university education from age groups beyond the 18-24 group. The above list recognizes outside forces that place demands on a university system, but also to be considered are the ramifications of one or more Ontario universities setting enrolment ceilings below the student demand for entrance.

Keeping all of these concerns in mind, the Committee is as convinced as OCUA that "the future of the university system is not what it used to be", especially until the 1990's when the 18-24 age group will again be growing every year. In order to create some framework beyond the demographic profile of the 18-24 age group, the Committee looked at (1) Grade 13 enrolments in relation to university enrolments, (2) the effects of the 18-24 age group on enrolments, (3) the straight-line effects of the 18+ age group on enrolments, and (4) speculated about the shape of a possible enrolment curve for Ontario between 1976 and 1993. Also, in view of the announced moratorium on graduate student growth generating funding units, it was decided to eliminate this variable from any futuristic research on total student enrolments. Therefore, the projections made in this section were only concerned with undergraduate enrolments.

The reader is again warned that none of the future demographic figures

Table 9

Grade 13 enrolment and first year entry from grade 13

	Grade 13 Enrolment[1]	Option 1		Option 2		Option 3	
		Participation Rate	Number	Participation Rate	Number	Participation Rate	Number
1973	50,712	.49	24,679				
1974	50,101	.52	25,821 *				
1975	51,074	.53	26,949				
1976	53,048		28,115	.54	28,646	.535	28,381
1977	53,547		28,380	.55	29,451	.540	28,915
1978	54,270		28,763	.56	30,391	.545	29,577
1979	53,045		28,114	.57	30,236	.550	29,175
1980	56,461		29,924	.58	32,747	.555	31,336
1981	56,141		29,755	.59	33,123	.560	31,439
1982	56,308		29,843	.60	33,785	.565	31,814
1983	52,899		28,036	.61	32,268	.570	30,152
1984	48,613		25,765	.62	30,140	.575	27,952
1985	45,767		24,257	.63	28,833	.580	26,545
1986	45,178		23,944	.64	28,914	.585	26,429
1987	45,073		23,889	.65	29,297	.590	26,593
1988	46,897		24,855	.66	30,952	.595	27,904
1989	46,607		24,702	.67	31,227	.600	27,964
1990	47,909		25,392	.68	32,578	.605	28,985
1991	49,123		26,035	.69	33,895	.610	29,965

Option 1: Participation rate held constant at 0.53
Option 2: Participation rate increasing at .01/yr.
Option 3: Participation rate increasing at .005/yr.

* Actual first year entrants from Grade 13 from Ontario Universities Application Centre.

1. OISE actuals and projections.

can be realistically expected to reach exactitude due to the rapidly changing and volatile social conditions that are occurring in Ontario, the rest of Canada, or the world for that matter. However, it is hoped that the findings will lead to future studies that will produce better prediction factors and projections.

3.2.1 Grade 13

Tracing the data that are available during the three years of operation for the Ontario University Application Centre we are able to ascertain that the participation rate of Grade 13 enrolments for the previous academic year has been increasing from 49% to 53%. These data also show that Grade 13 accounts for three quarters of first-year university entrants. Using OISE projections of Grade 13 enrolments, Table 9 was constructed looking at three options which test the sensitivity of increasing participation rates. These results show:

	Range over period 1973 - 1991
Option 1 – rate held constant	29,843 - 24,702
Option 2 - rate increased @ .01 per year	33,895 - 28,646
Option 3 - rate increased @ .005 per year	31,814 - 26,429

Since all three options are influenced by fluctuations in the 18-24 age group the high and low projections vary about 5,000 students per year. However, these results do show that the number of students entering universities from Grade 13 will approximate present levels of enrolment if there is a slight increase in participation rates over present levels.

3.2.2 Projections from the 18-24 and 18+ age groups

Table 10 was constructed to show the participation rates of FTE undergraduates of both the 18-24 and the 18+ age groups from 1962 -1976. Statistics Canada enrolment figures provide a good basis for these proportions because of the consistency of reporting requirements from year to year.* The results from Table 10 indicate that the participation rate has levelled for both groups since 1973.

Using the findings reported in Table 10, two projections were made from the two age groups holding the present participation rates constant. These projections are reported in Table 11.

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* Note: Enrolment figures from MCU are higher than those reported by Statistics Canada. (Estimates from Statistics Canada for 1975-76 = 150,300 FTE students while MCU actuals - 174,000 FTE.)

Table 10

FTE Undergraduate as a Percentage of 18-24 Year Group and 18+ Group in Ontario (1962-75)

Year	FTE Undergraduates[1]	As a % of 18-24 yr. group[2]	As a % of 18+ age group[2]
1962-63	39,342	7.00	.99
1963-64	44,494	7.52	1.08
1964-65	50,627	8.13	1.21
1965-66	57,929	8.71	1.33
1966-67	67,857	9.32	1.51
1967-68	77,016	10.08	1.66
1968-69	90,483	11.15	1.90
1969-70	105,597	12.31	2.15
1970-71	120,061	13.20	2.37
1971-72	132,109	13.96	2.54
1972-73	133,736	13.85	2.51
1973-74	140,978	14.22	2.58
1974-75	146,400	14.29	2.61
1975-76	150,299	14.19	2.61

Source: 1) Statistics Canada, Education in Canada and Advance Statistics of Education (74-75).

2) Statistics Canada, Population Projections by Age Group and Marital Status for the Provinces.

Table 11

Projections of FTE Undergraduate Students in Ontario for 1976 - 1993

A) Using a participation rate of 14% of the 18-24 year old age group.

Year	18-24 Population* (in thousands)	Projected FTE Undergraduates
1976-77	1,112.8	155,792
1977-78	1,140.2	159,628
1978-79	1,165.9	163,226
1979-80	1,188.1	166,334
1980-81	1,204.2	168,588
1981-82	1,214.9	170,086
1982-83	1,219.1	170,674
1983-84	1,216.9	170,366
1984-85	1,196.8	167,552
1985-86	1,168.0	163,520
1986-87	1,138.3	159,362
1987-88	1,141.1	159,754
1988-89	1,091.8	152,852
1989-90	1,071.6	150,024
1990-91	1,051.0	147,140
1991-92	1,046.3	146,482
1992-93	1,047.6	146,664

B) Using a participation rate of 2.61% of the 18+ age group.

Year	18+ Population* (in thousands)	Projected FTE Undergraduates
1976-77	5,898.2	153,943
1977-78	6,048.6	157,868
1978-79	6,199.2	161,799
1979-80	6,349.2	165,714
1980-81	6,497.9	169,595
1981-82	6,644.4	173,419
1982-83	6,787.7	177,159
1983-84	6,926.7	180,787
1984-85	7,049.0	183,978
1985-86	7,162.1	186,931
1986-87	7,274.7	189,870
1987-88	7,390.3	192,887
1988-89	7,505.0	195,880
1989-90	7,617.4	198,814
1990-91	7,724.7	201,617
1991-92	7,830.6	204,378
1992-93	7,935.4	207,114

* Source: Statistics Canada, Population Projections by Age Group and Marital Status for the Provinces.

The results from the 18-24 age group show that if present trends continue, the number of FTE undergraduates could increase to a maximum of over 170,000 in 1982-83 for an increase of 20,000 students. (If this 13.3% increase is translated into MCU's reporting format, the Ontario system will grow from 174,000 to 197,000 FTE undergraduates between 1976 and 1984.) In 1991, the projection from the 18-24 age group produced the lowest number of FTE undergraduates of 146,500 students which only represents a system decrease of 3,500 from present levels. A .5% increase in the participation rate would compensate for this decrease.

The projections from the 18+ age group show a straight line increase from 150,000 FTE undergraduates to 207,000 by 1993. If this proves to be a more appropriate indicator than the 18-24 age group, the additional demand on universities would increase steadily with no cyclic contraction.

The Committee feels that neither measure alone is appropriate as a single indicator of future enrolments and that a properly weighted projection using both age groups would be more realistic. Even though we are presently unable to substantiate the actual age groupings of undergraduates, we are aware that undergraduate population is not entirely reflected in the 18-24 age group. In order to create another

scenario the following research assumptions were made:

(1) that three quarters of the full-time undergraduate enrolments would be directly affected by the 18-24 age group (the participation rate of 9.18% held at current levels).

(2) that the remaining quarter of full-time undergraduates would relate to the 18+ age group (the participation rate of .58% held at current level).

(3) that the part-time undergraduate head count would also relate to the 18+ age group (current participation rate of 1.05%).

The calculations used to derive an FTE total undergraduate are shown in Tables 12, 13 and 14. Figure 5 compares this compromise projection to those using the 18-24 and 18+ age groups. These results moderate the fluctuations that may occur by producing a peak enrolment of 172,000 in 1983-84 and a low enrolment of 164,500 in 1990-91. Using the compromise model, enrolments would grow 14.6% between 1975-76 and 1983-84 and decrease 4.3% between 1983-84 and 1990-91. At no time would this model dip below present enrolment levels. Any upward change in participation rates between 1983 and 1990 would tend to cause a plateau in enrolment levels.

The reality of the situation will of course be different from any projection that is made, but it is interesting to note that until 1981

Table 12

Compromise Projection of FTE Full-time Undergraduates in Ontario for 1976-93

	18-24 Year Population (in thousands)	Projection of 3/4 of the FTE Full-time Undergrads[1]	18+ Population (in thousands)	Projection of 1/4 of the FTE Full-time Undergrads[2]
1976-77	1112.8	102,155	5898.2	34,210
1977-78	1140.2	104,670	6048.6	35,082
1978-79	1165.9	107,030	6199.2	35,955
1979-80	1188.1	109,068	6349.2	36,825
1980-81	1204.2	110,546	6497.9	37,688
1981-82	1214.9	111,528	6644.4	38,538
1982-83	1219.1	111,913	6787.7	39,369
1983-84	1216.9	111,711	6926.7	40,175
1984-85	1196.8	109,866	7049.0	40,884
1985-86	1168.0	107,222	7162.1	41,540
1986-87	1138.3	104,496	7274.7	42,193
1987-88	1141.1	104,753	7390.3	42,863
1988-89	1091.8	100,227	7505.0	43,529
1989-90	1071.6	98,373	7617.4	44,181
1990-91	1051.0	96,482	7724.7	44,803
1991-92	1046.3	96,050	7830.6	45,417
1992-93	1047.6	96,170	7935.4	46,025

1. Using a participation rate of 9.18%.
2. Using a participation rate of .58%.

Table 13

Compromise Projection of FTE Part-time Undergraduates in Ontario for 1976-93

	18+ year Population (in thousands)	Projected Part-time Head Count[1]	FTE for Part-time Undergraduates[2]
1976-77	5,898.2	61,931	17,694
1977-78	6,048.6	63,510	18,146
1978-79	6,199.2	65,092	18,598
1979-80	6,349.2	66,667	19,048
1980-81	6,497.9	68,228	19,494
1981-82	6,644.4	69,766	19,933
1982-83	6,787.7	71,271	20,363
1983-84	6,926.7	72,730	20,780
1984-85	7,049.0	74,014	21,147
1985-86	7,162.1	75,202	21,486
1986-87	7,274.7	76,384	21,824
1987-88	7,390.3	77,598	22,170
1988-89	7,505.0	78,802	22,515
1989-90	7,617.4	79,982	22,852
1990-91	7,724.7	81,109	23,174
1991-92	7,830.6	82,221	23,492
1992-93	7,935.4	83,321	23,806

1. Using a participation rate of 1.05%.

2. Converted by Statistics Canada ratio (1 FTE = 3.5 Part-time head count).

Table 14

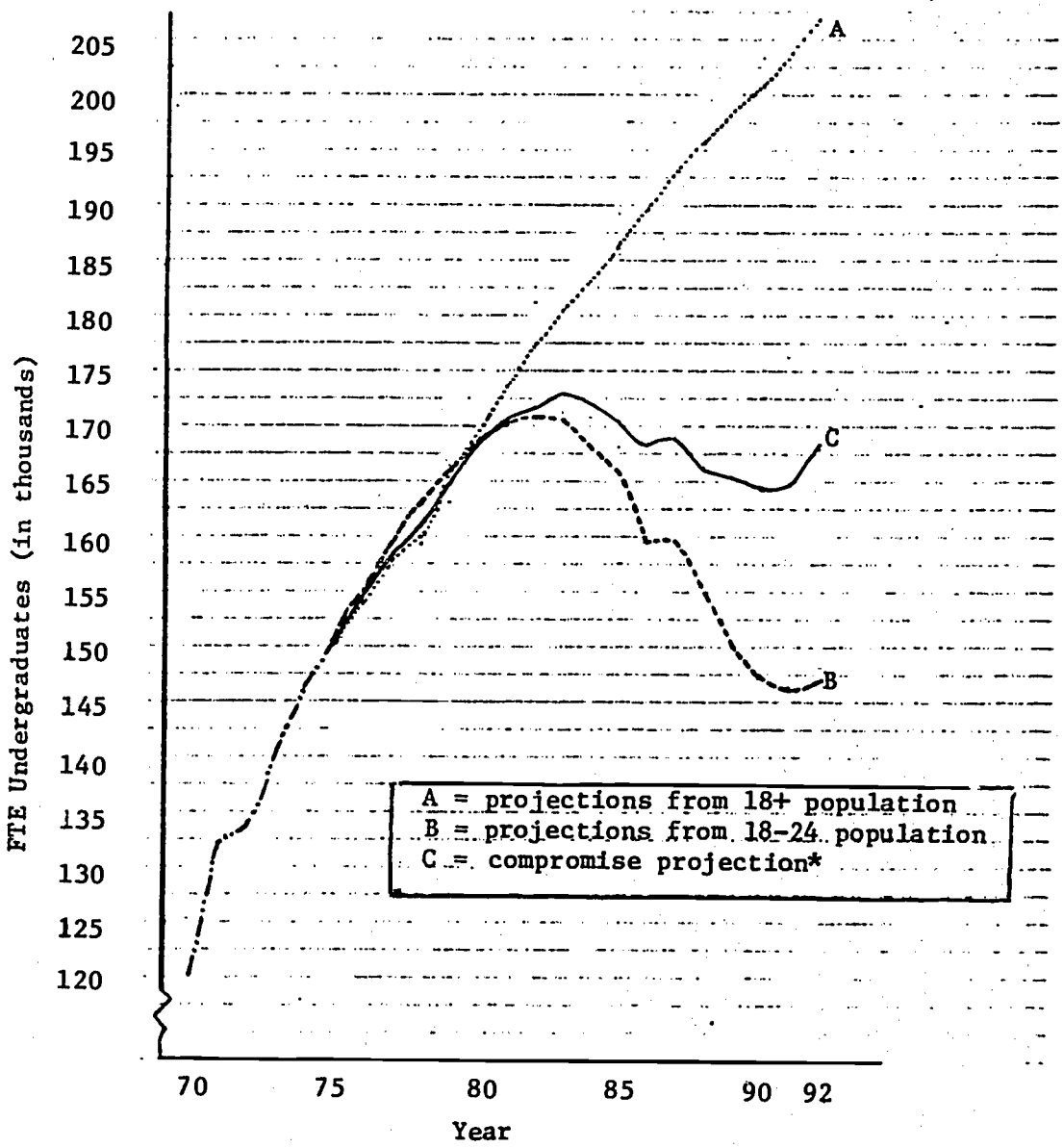
Computation of Compromise Projected Total FTE Undergraduates in Ontario for 1976-93

	3/4 of Full-time Undergraduates[1]	1/4 of Full-time Undergraduates[2]	FTE for Part-time Students[3]	Total FTE Undergraduate Projection
1976-77	102,155	34,210	17,694	154,059
1977-78	104,670	35,082	18,146	157,898
1978-79	107,030	35,955	18,598	161,583
1979-80	109,068	36,825	19,048	164,941
1980-81	110,546	37,688	19,494	167,728
1981-82	111,528	38,538	19,993	170,059
1982-83	111,913	39,369	20,363	171,645
1983-84	111,711	40,175	20,780	172,666
1984-85	109,866	40,884	21,147	171,897
1985-86	107,222	41,540	21,486	170,248
1986-87	104,496	42,193	21,824	168,513
1987-88	104,753	42,863	22,170	169,786
1988-89	100,227	43,529	22,515	166,271
1989-90	98,373	44,181	22,852	165,406
1990-91	96,482	44,803	23,174	164,459
1991-92	96,050	45,417	23,492	164,959
1992-93	96,170	46,025	23,806	166,001

1. Projected from 18-24 year population (see Table 12).
2. Projected from 18+ population (see Table 12).
3. Projected from 18+ population (see Table 13).

Figure 5

Projections of FTE Undergraduates in Ontario from 1975-93 (Showing Actual FTE Enrolments from 1970-75)



* Compromise Projection: (See Table 11)

.75 of full-time undergraduates projected from 18-24 population.

.25 of full-time undergraduates projected from 18+ population.

Part-time students projected from 18+ population and converted to FTE equivalents.

all of the predictors tend to agree that significant increases in undergraduate students will occur if the present variables that effect enrolments remain unchanged. If at any time, the system as a whole, or individual universities decide to limit enrolments at present levels or to grow at a slower rate than the present student demand level, a significant moderating influence can be expected to occur in any future levels of enrolments.

3.3 Implications for Steady State and Growing Institutions

It was mentioned earlier that if any university or group of universities decided to maintain stable levels of enrolments, such decisions would greatly affect the enrolment projections. In order to illustrate this point, the following hypothetical example is presented.

Recently, a number of universities have given notice that they were rapidly approaching a state of affairs that would require placing enrolment ceilings on undergraduates. In this hypothetical exercise, it was decided to stabilize the enrolments of some universities beginning in 1977-78 at 70,000 FTE undergraduates.* The enrolments at the other universities reflect the percentage increase or decline in the compromise projections (see Table 15) from year to year.

Policies could be to (A) meet the demand as it occurs, (B) stabilize all university enrolments at a level equal to the lowest point on the enrolment graph in 1991-92 or (C) increase enrolment at an annual rate such that the unmet demand and surplus supply balance to zero at the turn of the century. If policy option A is chosen either the funding formula would have to be changed, large internal transfers would have to be introduced, or staff would have to be released beginning in 1984 with additional staff added beginning in 1991. Policy option B would

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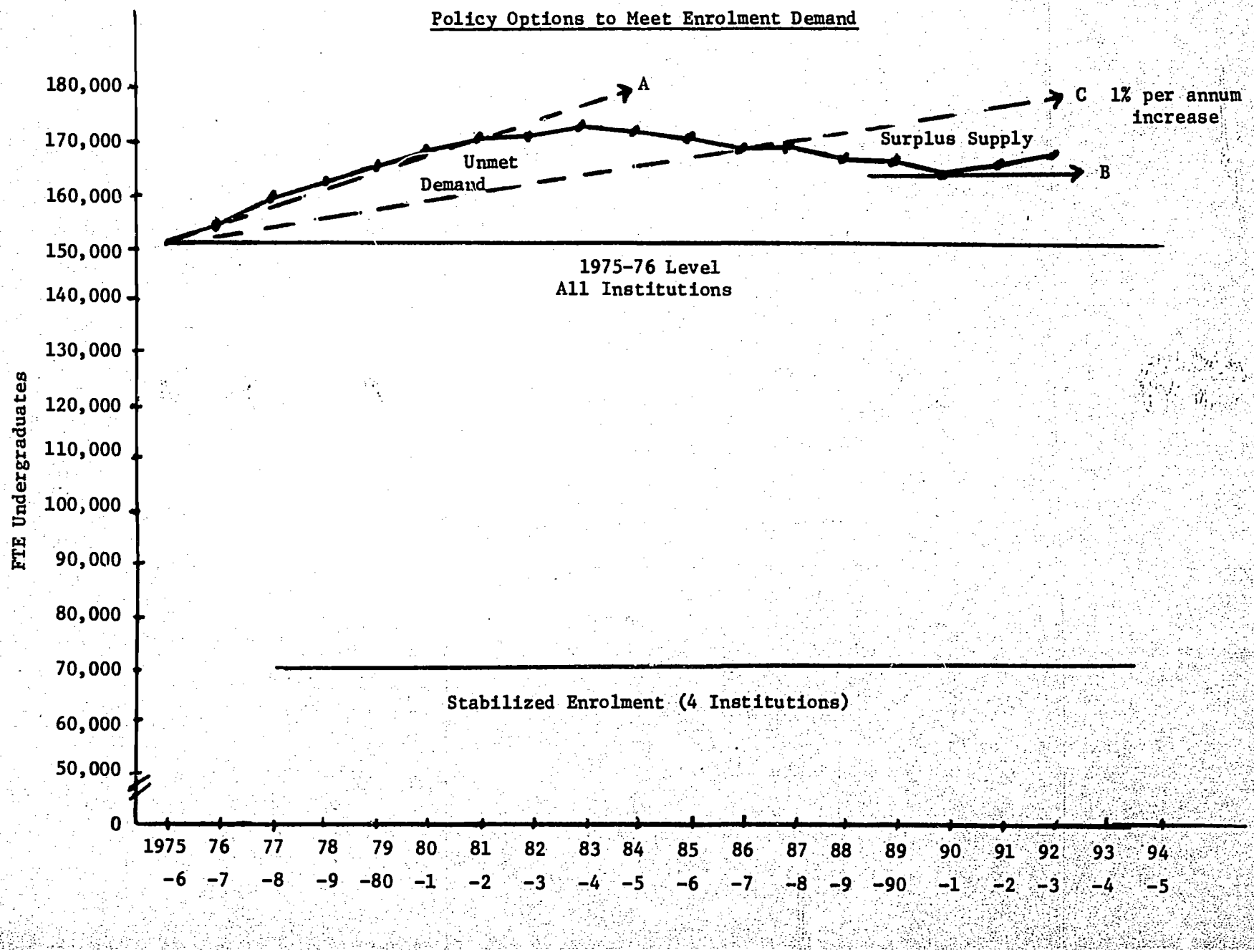
* The 70,000 FTE undergraduates approximate the sum of enrolments at Ottawa, Queen's, Toronto and Western in 1975-76.

Table 15

	(1) FTE Student Demand (Compromise Projection)	(2) % Increase over Previous Year	(3) Assumed Stabilized Enrolment	Fluctuating Enrolment	Increase Needed For Non-stabilized Universities to Meet Demand % p.a.	% cum
1975-76	150,299	-	67,000	83,299		
1976-77	154,059	2.50	68,668	85,391	2.5	2.5
1977-78	157,898	2.49	70,000	87,898	2.9	5.5
1978-79	160,879	1.89	70,000	90,879	3.4	9.1
1979-80	164,941	2.52	70,000	94,941	4.5	14.0
1980-81	167,728	1.70	70,000	97,728	2.9	17.3
1981-82	170,059	1.40	70,000	100,059	2.4	20.1
1982-83	171,645	.93	70,000	101,645	1.6	22.0
1983-84	172,666	.59	70,000	102,666	1.0	23.2
1984-85	171,897	-.44	70,000	101,897	-0.7	22.3
1985-86	170,248	-.96	70,000	100,248	-1.6	20.3
1986-87	168,513	-1.02	70,000	98,513	-1.7	18.3
1987-88	169,786	.75	70,000	99,786	1.3	19.8
1988-89	166,271	-2.07	70,000	96,271	-3.5	15.6
1989-90	165,406	-.52	70,000	95,406	-0.9	14.5
1990-91	164,459	-.57	70,000	94,459	-1.0	13.4
1991-92	164,959	.30	70,000	94,959	0.5	14.0
1992-93	166,001	.63	70,000	96,001	1.1	15.2

Figure 6

Policy Options to Meet Enrolment Demand



deny admission to a substantial number of applicants, about 8,000 applicants in 1983-84. The implications of this for the accessibility policy of government are clear. Policy option C would require the denial of some demand during the late seventies and early eighties as a tradeoff for a surplus supply of spaces in the late eighties and in the nineties. It is possible that the demand of the late seventies and early eighties would await loosening up of spaces later on; there may be some postponing of demand to a later time but it is unlikely that a major portion of this demand will await the opening of capacity several years in the future. Prospective applicants have other choices: CAATs, universities in other jurisdictions, for example. Option C would require annual increases in enrolment approximating 1% overall, and 2.3% for the non-stabilized universities.

Even though it is again highly doubtful that the results of this example will reflect what will actually happen, Figure 6 shows how easily an enrolment plateau could emerge between 1982 and 1992 if a significant number of universities were to stabilize enrolments (policy option B).

Germane to this discussion of steady-state and growth institutions is the question whether the goal of "accessibility" is to be defined as "local accessibility", i.e. to a university in the general area where the

population growth is occurring, or not. If so, some of the "steady-state" universities will have to reconsider their policies. If not, government will have to contemplate subsidies for transportation and residence for students going away from home, whether through increased student aid or by other means. The many academic and social advantages of a highly mobile student population must be weighed against the economic disadvantages.

3.4 Effects of Enrolment Averaging

The Minister has accepted OCUA recommendations 75-18 and 75-19 regarding the distribution of formula grants (1) in 1976-77 to be based on an averaging of 1/3 of the eligible undergraduate BIU's in each institution in 1974-75 and 2/3 in 1975-76 and (2) for 1977-78 based on the average enrolment in 1974-75, 1975-76 and 1976-77.

The positive aspect of these recommendations is their effect on stability. By averaging two and then three years the impact of large swings in enrolment growth is moderated. Whether the number of years to be included in this average should remain at three or increase to a larger number depends on the amount and variability of enrolment growth. Too many years results in insensitivity to large changes in enrolment for which resources are needed. Too few years results in large swings in income increments with large changes in enrolment increases. But irrespective of whether the number of years remains at three or increases to more the overall impact is positive and we commend OCUA for this forward step.

Having said that we must go on to observe that enrolment averaging will be unlikely to inhibit enrolment growth as an income level determinant. Maintenance of accessibility is a government policy. Also, small institutions feel extremely vulnerable to changes in policy or demand

which influence income levels. All institutions feel socially responsible. All of these factors combine to promote growth of institutions that now feel hard-pressed financially. We would hope to avoid any approach to enrolment-related financing that would tempt institutions in difficult financial circumstances to try to solve their problems by seeking enrolment increases now as a hedge against future decline.

Earlier in this section we suggested a conservative growth amount of 23,000 students between 1976 and 1983, an annual rate of increase of about 1.8%. It is appropriate to note here that if recent historical information on the forecast error has any meaning at all, the actual increase will be a good deal more than projected. For example, in the fall of 1974 universities projected an increase of 2.5% for the fall of 1975; the actual increase was 6.7%. We refer readers to last year's brief for reasons for this happening.* In any case the direction of forecast error has been consistent (actuals greater than projected). We wish to make the point here that <u>we view the 23,000 figure as a minimum potential which could easily double unless some depressant measures are instituted</u>. It goes without saying that the amount of depressant must be socially acceptable but we need something more than an enrolment-averaging stabilizer! We reiterate the message of our

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* <u>Equity for Ontario's Universities</u>, p. 22.

May, 1975 brief. "Ways must be found to enable universities that wish to stabilize enrolments to do so....while other universities with unfilled capacity for growth will find it possible to accept increased enrolments." The present formula does not provide enough funds to meet demands arising from inflation, growth, quality, career development, innovation, etc. so universities that genuinely wish to achieve steady state are pushed into growing despite their good intentions. Since it is now only the distribution of funds that is enrolment-driven (the global amount is fixed in advance by government policy) the ultimate consequence of these actions to small and geographically dispersed institutions is inevitable. We recommend that:

> *OCUA give further study to our earlier model (in Equity for Ontario's Universities), the "Connell" suggestion from the University of Toronto and any other models designed to separate fixed and semi-fixed costs from variable costs, and to decouple the former types of costs from enrolment growth in determining universities' formula grants.*

3.5 Planning for Future Levels of Enrolment

All of the enrolment projections point to the problems of grappling with the demand in Ontario from academically qualified citizens for a university education. At present we know that the 18-24 age group does not completely account for the enrolment growth that has been occurring in the last few years since year-to-year growth in that age group has been below enrolment growth. There are four possible contributing factors: (1) the participation rate could be increasing in that age group; (2) a greater number of students could be entering universities beyond the age of twenty-five years; or (3) the tendency of students to complete a programme could be greatly improved; and (4) more students could be in four-year programmes rather than three-year ones. Earlier we drew attention to the significant difference between the number of FTE undergraduates reported by Statistics Canada and MCU. Using the MCU figure of approximately 174,000 in 1975-76, the participation rate of the 18-24 age group rises from the reported 14% to 16%. Utilizing a constant rate of 16% on the 18-24 age group would not change the shape of the projected curves, but it would add over 20,000 students per year to the system in Ontario.

OCUA has asked the universities to respond to the question of how to accommodate the enrolment bulge in the early 1980's. It is evident at this point that if growth in the next few years only responds to demand

for entrance it will be necessary to plan for the accommodation of over 20,000 students which will take a large commitment in teaching resources.

Several points should be noted in considering future university enrolments: (a) Although the increase in total provincial population will be temporarily checked in the 1980's, the numbers will not in any year be lower than the existing (1976) population. (b) Different regions of Ontario will have vastly different patterns of change. Northeastern and Northwestern Ontario will experience a considerable decline in numbers during the 1980's. Because of the great importance of Laurentian and Lakehead Universities to the well-being of those regions, and to the integrity of the Ontario system we recommend that:

i) Laurentian and Lakehead Universities continue and expand their programmes tailored to respond to the needs of the population they serve.

ii) OCUA consider the advisability of recommending provincial subsidization of residence and transportation costs for Laurentian and Lakehead students, as a means of utilizing the full the potential of those institutions, overcoming their comparative isolation from the rest of the Ontario system, and furthering the implementation of the policy of decentralized accessibility which OCUA has already promoted through its Northern Grants.

The necessity of defining the Government's limits of commitment to its citizens to provide university education is paramount, and at the same time the universities must articulate plans to deliver quality education and to judiciously manage the human resources they possess. The phrase that university quality and student accessibility are on a collision course appears to be an adequate description of the present state of affairs.

SECTION 4

TRENDS IN INFLATION AND INDICATORS OF UNIVERSITY SUPPORT

4.1 Inflationary Trends

Over the last few years we have seen the purchasing power of the university dollar decrease 20% since 1971-72. Reviewing the implications of the levels of operating grants for 1976-77 (which have been adjusted to reflect the distortion caused by enrolment averaging), we find that if the federal anti-inflation programme is effective and keeps the rate of inflation at 8% for 1976-77, the Ontario universities will experience the first fiscal year since 1971 where purchasing power has not been eroded (see Table 16).

Table 16

Erosion of the Purchasing Power of the University Dollar

Year	BIU Value	% Increase	CPI CANSIM 602001 (1971 = 100)	% Increase	Purchasing Power of the University Dollar
1971-72	1,730		107.4		$1.00
1972-73	1,765	2.0	117.2	9.1	0.93
1973-74	1,825	3.4	131.8	12.5	0.84
1974-75	1,955	7.1	144.3	9.5	0.82
1975-76	2,111	8.0	158.7est.	10.0	0.80
1976-77	2,312	8.1[1]	171.4est.	8.0[2]	0.80

1. Adjusted to reflect actual BIU value (see Table 1); MCU announced a 9.5% increase which was inflated due to enrolment averaging.

2. Based on the assumption that the anti-inflation guidelines will prove effective.

4.2 Trends in Indicators of University Support

Grants to universities depend on total funds available to government. Government expenditures make up a significant proportion of the Gross Provincial Product. Thus, two possible measures of support are university operating grants compared to (1) total government budgetary expenditures and (2) the Gross Provincial Product (see Table 17). It should be noted that operating grants do not include all government dollars spent on university education, but these grants do relate to amount of funds contributed by government for day-to-day operating needs of universities. Contrary to conventional wisdom, the results of the comparison show that both ratios have been on a decline since 1971-72 and that operating grants have not kept pace with the growth in either Total Government Budgetary Expenditure or the Gross Provincial Product. It is interesting to note that the rate of increase in government expenditure (GBE) has run ahead of the growth in the GPP; recent decisions which place restraints on government expenditures would seem to indicate that this trend could reverse itself or at least stabilize. The GBE ratio has shown a pronounced downward trend prior to levelling off. The GPP ratio has fluctuated more but levels off recently like the GBE ratio. In view of uncertainities in GBE as a proportion of GPP, we favour slightly the GPP ratio as a target indicator of university support.

Table 17

Analysis of Government Expenditures on Universities

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
University Operating Grants[1] (millions)	347.0	387.7[2]	397.7	422.0	485.8	569.1	651.0[3]
Total Government Budgetary Expenditure (millions)	5,160	5,965	6,412	7,223	8,722	10,552	11,791
Total Government Budgetary Revenue (millions)	5,024	5,340	6,046	6,844	8,176	8,982	10,814
Gross Provincial Product (billions)[4]	35.3	38.1	42.7	48.8	58.3	64.0	73.9
Ratio (%)							
University Op. Grants / Total Gov't Bud. Exp.	6.72	6.50	6.20	5.84	5.53	5.39	5.52
University Op. Grants / GPP	0.98	1.02	0.93	0.86	0.83	0.89	0.88

1. (Excludes Ministry costs, OSAP, Grants in lieu of municipal taxes, and principal and interest payments on debentures.)
2. Ten month fiscal year pro-rated to twelve at 1/.85 (actual grants = $329.5).
3. Minister's announcement, February 17, 1976.
4. Revised figures from Ontario Budget 1976.

Sources: Grants: Expenditure Estimates 1970-71 through 1975-76, Ontario government.
Government Expenditures and Revenue: Ontario Budget 1976, Table C11, p.28.

5.1 Derivation of Operating Finance Needs of the System

Total global funding recommendations are based on increases necessary to (1) accommodate expected additional enrolment of 4.5%, (2) provide for manpower development, (3) maintain and improve service and quality in the non-salaries area and (4) meet expected inflation. IT SHOULD BE NOTED THAT THESE ARE RECOMMENDATIONS FOR GLOBAL FUNDING OF THE SYSTEM NOT DISTRIBUTION TO THE UNIVERSITIES.

In arriving at global recommendations for 1976-77 OCUA arbitrarily recommended discounting enrolment growth by 50% (see Table 1, p. 12, OCUA 75-VI). Our recommendation for the increase in system funds to be generated by enrolment growth is based upon estimates of cost generation. We assume that approximately fifty percent of system expenditures are highly variable in relation to enrolment, that is, related to expenditures for personnel directly related to the teaching process, and that the other 50% are semi-fixed in nature. Further, we assume that increases in enrolment require greater unit expenditures for the variable half than for the semi-fixed half, specifically 80% for the former and 50% for the latter. The discount factor then becomes:

(Variable Proportion x Discount Factor) + (Fixed Proportion x $\frac{\text{Discount}}{\text{Factor}}$)

or,

(0.50 x 0.80) + (0.50 + 0.50) = 0.65

and, for purposes of system funding only, the increase for enrolment is calculated as 65% of expected enrolment growth, i.e., 0.65 x 4.5% = 2.9%

SECTION 5

RECOMMENDATIONS FOR INCREASES IN SYSTEM OPERATING INCOME FOR 1977-78

The discussion of career development earlier in Section 2 demonstrated a need for a 1.24% increase in total budget to provide for career development assuming no increase in numbers of academic staff (see p. 17). We recommend this amount exclusive of and in addition to any increases for enrolment.

For maintenance of service and quality in the non-salaries area we have adopted OCUA's recommendation of last year which was 2.5% for improvement of level of service less 1.5% for increased efficiency (see p. 23). Our interim recommendation (pending the studies referred to on p. 22) is for a net of 1% under the same assumption.

The inflation increase for salaries and fringe benefits is determined by the AIB target of 6%. The inflation increase for the non-salaries area is placed at 10% in the expectation that inflation for non-salary purchases will substantially exceed the AIB target of 6%. The record of erosion of purchasing power for this general class of items is clear, (see pp. 20, 22 and 23). These percentage increases are then applied to the respective shares of the 1976-77 base and increases for enrolment, career development and maintenance of service and quality. We therefore recommend that:

Under the assumptions made, total increase in operating income to universities in 1977-78 should be at a minimum $87.3 million, an increase of 11.3%. (Table 18, p. 59)

Table 18

Derivation of Total Operating Income Funding Recommendations for 1977-78
($ Millions)

Assumed for 1976-77 (Table 1, p. 12, OCUA 75-VI)

Salaries (72.4%)	$551.8m
Fringe Benefits (7.2%)	54.9
Non-Salary (20.4%)	155.4
Total	$762.1

Funding Increases for 1977-78	$m	%
Increased Enrolment @ 65% of Anticipated 4.5% Increase	22.3	2.90
Career Development (Salaries & Fringe Benefits)	9.4	1.24
Maintenance of Service & Quality (Non-Salaries)	1.5	0.20
Inflation		
Salaries & Fringe Benefits @ 6% AIB Target	38.0	5.00
Non-Salary @ 10%	16.1	2.10
Total Increases	$87.3	11.44

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June 7, 1976.