

**AN ECONOMIC ANALYSIS OF THE EARLY RETIREMENT
INCENTIVE PLAN: A CASE STUDY OF BOWLING GREEN STATE
UNIVERSITY**

Bevars D. Mabry

AN ECONOMIC ANALYSIS OF THE EARLY RETIREMENT INCENTIVE PLAN: A
CASE STUDY OF BOWLING GREEN STATE UNIVERSITY¹

by Bevars D. Mabry, Bowling Green State University

For a variety of reasons, organizations - both public and private - have at times adopted programs to encourage voluntary, early retirement among their employed personnel. If the organization has experienced zero or negative growth, it may wish to reduce the number of personnel, and an increase in voluntary attrition is perhaps the least controversial means to accomplish this objective. Even a growing organization may, on the other hand, desire to bring in "new blood" by changing the age composition of its work force, which in turn requires the exiting of older members. In many institutions, salaries constitutes a significant proportion of total operating costs, often in the range of seventy to eighty percent of these costs. Since length of service correlates highly with salary, the replacement of many long-service employees with younger, lower salaried ones, can reduce significantly the salary budget of the organization. Similarly, an increase in the rate of attrition of older employees in the job hierarchy of the institution can open up promotional opportunities for younger and, perhaps, more vigorous employees.

In higher educational institutions, mandatory retirement ages have been common, but these mandatory rules will become, by Act of Congress, invalid on January 1, 1994. Hence, the opportunity of faculty to continue their employment well past the age of seventy can reduce the rate of retirement and negate the institutional benefits derived from such turnover.² Consequently, programs to encourage early retirement voluntarily may well receive increased attention in the next several years. Indeed, studies at Pennsylvania State University and the University of Virginia,³ as well as at Brandeis University⁴ have confirmed that one of the most important determinants of the actual retirement age is the liberality of their retirement plan. In Ohio, both the State Teachers Retirement System and the Public Employees Retirement System have had operational early retirement incentive plans (ERI) since 1983,⁵ and in April 1986,

some 292 public schools and institutions of higher learning in Ohio had implemented an early retirement plan, and 3967 teachers had elected to participate in the plan.⁶ Among the institutions were 279 public schools, three 2 year technical colleges, two community colleges, seven state universities and one medical college (see Table 1). More than two-thirds of these institutions purchased three years or less of service credits for participants in the early retirement program, although six of the seven state universities purchased up to five years of service credit for participants, the maximum allowed by STRS.⁷ Some one hundred seventy (over fifty-eight percent) of the participating institutions only allowed their faculties a one-year time interval in which to select the ERI program. Of the sixty-six institutions that ran the program for more than one but less than two years, the interval of the plan spanned at least two academic years, which allowed participants the option of retiring in either of the years. Of the fifty-two institutions that have committed themselves to operate the plan from two to four years, teachers have had more extended opportunities to elect to participate in the ERI program. Only four institutions have committed themselves to continue to operate the program for an extended period of time, and of these only one state university (Toledo) has made this commitment. However, during the three-year interval from 1983 to 1986, some forty-seven institutions have elected to renew or reinstate their programs. (See Table 2). Consequently, of the 122 institutions in 1986 which have had programs continuing for two retirement years or more, almost thirty-nine percent had extended their originally scheduled duration of the plan. In terms of the number of years of purchased service credit, seventeen of the continued programs were upgraded, twenty-four were unchanged, and six were downgraded.

As of April, 1988, only eight of the twelve major state universities have participated in the ERI program of STRS.

(See Table 3), and of these only one had at the time a program projected to continue beyond 1988. Ohio State University adopted for calendar year ending April 14, 1985 a plan providing for the purchase of three years of service credit. The plan was renewed for a three-year period ending October 31, 1988 and was upgraded to a purchase of five years of service credit. The plan is unique in that the cost of the purchased service credits must be absorbed by the department from which a participating faculty member retiree. Wright State University has adopted a plan to be operated for one calendar year, ending August 31, 1988. Although the University of Cincinnati has not participated in the ERI plan of STRS, it has operated an early retirement plan for AAUP members since A.Y. 1981-82 in the form of an annuity funded program. Akron, Central State and Youngstown also have not at this time participated in the program. Three state universities also permit faculty members to continue to teach one-term in each academic year for a specified period of time, subject to the income constraints established by STRS. These optional teaching programs had been introduced prior to ERI in order to encourage early retirement and to ease the transition of faculty into retirement.

The continuing opportunity of institutions to adopt, renew or reinstitute the ERI program and the existence of forty-seven plans that have been continued suggest the need for an economic feasibility analysis of the program.⁹ The continuing interest of teachers in early retirement options provides additional motivation to assess the economic impact of the ERI plan. About 83 percent of retirees indicated they retired when they did because of the availability of ERI. Their retirement income thereby became sufficient.⁹

Bowling Green State University had instituted an ERI plan for a 13-month period in 1984-85, and this study appraises the economic feasibility of both the expired plan and of a possible continuing one.

The Bowling Green State University Early Retirement Incentive Plan (ERI) was an economically feasible program in

that it represents a net savings to the University in its payment of salary to faculty. This net savings is demonstrated regardless of the method used to calculate the dollar benefits or costs. It is also true for programs instituted on a one-time basis or allowed to continue year by year, as is the practice at the University of Toledo. There are other non-economic attributes to the ERI plan, some of which have been identified above, but in this study only those elements which can be quantified with a dollar dimension are considered.

I. The ERI Plan of BGSU the "One-shot" or "Open-window" Approach. (1984-85)

Over a 13 month period in the years 1984 and 1985, faculty with given age and length of service characteristics were given the opportunity to retire under a program in which the University purchased up to five years additional service credit in the State Teachers Retirement System. These added years represented an increment to their retirement pay of up to ten percent of the retiree's base salary. According to a formula provided by STRS which made the System actuarially whole for the increased liability, the University "bought-out" the incremental cost to STRS for the participating retirees. For the 68 participating faculty retirees, this cost amounted to \$3,857,602.82 payable to STRS by the University over a five year period. The total academic year salary for the 68 retirees was \$2,580,796, or a buyout cost to A.Y. salary ratio of about 1.5 (actually 1.495).¹⁰

A. The University's calculations of net savings.

The University is concerned primarily with annual payment flows, not with the true economic cost or savings of ERI. The calculations serve its budget planning purposes, and the Vice President of Academic Planning and Budgeting has acknowledged that no attempt was made to calculate the true economic savings. For budgeting purposes, the University's calculations are useful, but there are elements in both the calculated savings and costs that should be modified if the true economic impact of

the program is to be accurately estimated. Essentially, the University calculates as savings: (1) the academic year salary of all retirees -- increased annually by the average percentage salary increment given to all returning faculty.¹¹ This constitutes the foregone salary retirees otherwise would have earned if they had not retired. (2) Fringes that these faculty would have earned also constitutes a saving. In addition to annual buyout payments to STRS, annual estimated costs include: (1) a one-time sick leave (unused) payment, not to exceed 30 days; (2) salary paid to retirees taking advantage of the Supplemental Retirement Program (SRP) in which the faculty teach one term per year and may earn up to one-third of their academic year salary, increased annually by the average percentage salary increment;¹² (3) salary paid to replacements of retirees; (4) fringes paid to replacements of faculty. Not all retirees are replaced.¹³ The difference between the sum of the elements of savings and the sum of the elements of costs are the University's estimates of its net savings or net costs. They are as follows:

Year	\$ Savings	\$ Costs	\$ Net Savings	Actual (A) or Estimated (E)
1984-85	472,170	414,313	57,857	A
1985-86	3,105,570	2,867,516	238,054	A
1986-87	3,329,437	3,035,964	293,473	A/E
1987-88	3,547,845	3,210,246	337,599	E
1988-89	3,793,493	3,256,362	537,131	E
1989-90	4,056,332	3,145,753	910,579	E
TOTAL NET SAVINGS			2,374,694	

B. An Economist's Calculations of the 1984-85 ERI Plan.

Although these are substantial reported savings, from an Economic perspective a number of modifications are necessary. The true savings or costs to the University must be based only on those outlays that the University would have incurred if ERI had not been implemented compared to those it did incur with the implementation of ERI. Obligations of the University that are the same with or without ERI are not true costs, and they must not be counted as costs of the ERI program. The University has counted

sick leave payments and SRP payments in its cost calculations even though the University would incur these costs at the time when the early retiree would normally have retired.¹⁴ The only added cost to the University is the arithmetic difference between the amount the University actually expended and the amount of the present value of these future obligations. If the retirees had retired at a later date, their salaries would have grown by an annual increment approximately equal to the discount rate used to compute the present value of these future payments. Hence, the increment and the discount rates approximately offset one another, and the payment is about equal to the present value. Therefore, the difference between the two is very close to zero.¹⁵

Whereas the University has incorrectly, in the economic sense, included sick leave and SRP payments as costs, on the other hand it has underestimated the costs of replacement salaries. (This underestimate is also contained in its estimate of savings on foregone salaries). The true salary base, both for salaries which are foregone and those which constitute replacements, are the A.Y. salaries increased by Summer School reimbursements plus fringe payments. We have increased replacement salaries by twenty percent to allow for Summer School payments; this adjusted salary has then been increased by seventeen percent to allow for fringe payments.¹⁶

Therefore, we have adjusted and reduced the costs to the University by deleting sick leave and SRP payments, and we have increased costs by adding Summer School and fringe payments on the latter to the replacement costs estimated by BGSU. To these adjusted costs are added the full annual buyout payments.

In the same vein, the salaries of faculty who would have retired without ERI are not attributable to ERI. They are not in reality "foregone" salaries and they must not be counted as savings generated by the ERI program. Moreover, since the academic year salary forms the base upon which Summer School salaries are determined, and since it is the sum of the two upon which the bulk of fringe benefit payments must be made, then true

savings must also include these addenda to A.Y. salaries.

Using data provided by the Academic Vice-President's office, we have calculated the number who were induced to retire by the ERI program. Because faculty normally retire each year, we must allow for this over time among the 68 who participated in ERI. We must deduct each year the number who would have normally retired from the 68 to obtain the balance of those who were induced to retire. It is only those who have been induced to retire that the University saves on their foregone salaries.¹⁷ On the one hand by applying the savings to all 68 retirees for the entire buyout repayment period, the University has overestimated such salary savings. On the other hand, the University has underestimated the salary savings by failing to account for savings on Summer School salaries and the fringe payments that must be made on these additional salaries. We have corrected for the overestimates and underestimates to derive the more accurate annual flow of savings. The adjusted annual flow of savings and costs are given below:

Year	Savings	Costs	Net Savings	BGSU Estimate
1984-85				
	376,822	310,372	66,450	57,857
1985-86				
	2,944,952	1,902,723	1,042,229	238,054
1986-87				
	2,631,405	2,017,402	614,003	293,473
1987-88				
	2,346,337	1,908,927	437,409	337,599
1988-89				
	1,936,735	1,667,152	269,584	537,131
1989-90				
	1,458,291	1,194,096	264,195	910,579
		TOTAL	2,693.9	2,374.7
		(in 1000)		

Our calculations show a net savings of about \$320,000 greater than those calculated by BGSU. Our estimates also show a flow of savings that is greater in the earlier years of the buyout period than that shown by BGSU. Because both estimates show a substantial savings, the ERI program when viewed solely from a financial perspective, has clearly benefitted the University by providing it in the 1985-90 period with substantially lower faculty salary expense.

II. Savings of An Early Retirement Incentive Program Continued on an Annual Basis.

The University of Toledo has an ongoing Early Retirement Incentive Plan. In addition it permits retired faculty to teach one quarter per year up to age seventy with a stipend of one-third the A.Y. salary. In an interview with Assistant Vice-President for Academic Affairs Richard Perry and Institutional Planner Gwen Scott, both were very enthusiastic about the merits of their ongoing program, citing the net positive benefits both to the University and to the faculty community.¹⁸ The projected net savings from the program were calculated for presentation to their Board of Trustees, who approved the ongoing plan. Calculations were also made for the actual costs and savings for the first year of the plan, which is now in its fifth year of operation. The University of Toledo estimates that its continuing program has doubled its annual rate of retirement among the faculty. Its net savings are estimated to be about \$300,000 per year, based upon this increased retirement rate and an estimated replacement salary of those faculty replaced (a discretionary decision of the Administration) equal to 60 percent of the retiree's A.Y. salary.

Although the University of Toledo's experience strongly suggests the economic viability of a continuing ERI program on an annual basis, more careful calculations are appropriate to estimate the savings and costs of such a program were it to be instituted at BGSU. It is fairly straight forward to develop a formula to obtain a break-even ratio for costs to equal benefits. The economic benefits to BGSU are the amount of the total foregone salaries plus fringe benefit payments from those faculty induced to retire. These benefits are reduced by salary payments to some proportion of replacements of these induced retirees. (There are no added savings from those who would normally retire and no added costs from their corresponding replacements). On the other hand, since BGSU must pay to STRS buyout payments for all retirees under ERI, whether they would normally have retired or would be induced to retire, these buyout costs must be applied each year to the total number

of retirees. BGSU breaks even if the benefits equal the costs.

Hence, the viability of the program depends upon whether or not the ERI plan actually does induce a sufficient number of faculty to retire early on an annual basis to pay for itself. Our calculations show the following: Without an ERI plan, the present value of future take home income of a faculty member continuing in the full-time employ of BGSU exceeds the present value of take home income of a retiree where no ERI plan exists. Hence, without ERI an income maximizer would not advance his normal retirement date. However, with an ERI program, for a period of up to 3.5 years in the future the faculty member anticipating retirement would have a present value of take home retirement income equal to or in excess of the present value of the take home income from not retiring.¹⁹ An income maximizer would therefore be better off to advance his/her retirement plans accordingly. The point to this analysis is that an ERI plan on an annual basis should induce an added flow of retirees.

We have first estimated the retirement flow of BGSU faculty under an annual ERI program and also that flow which would occur were no such program instituted. We have used data from the one-time ERI program which BGSU had implemented, recognizing that not all BGSU faculty eligible to participate in the ERI plan actually did so. Using distributions of faculty by years of service at BGSU and by age, assuming an average number of three years of non-ERI purchasable service, and by noting the ratios of those who did and did not retire under the previous ERI program, we have estimated retirement flows with and without ERI on an annual basis over a five year period beginning in 1988. These estimates give us the number of normal retirees, M; induced retirees, R; and total retirees, $N = M + R$.

For each group of retirees per year, BGSU is permitted by STRS to distribute the buyout costs over a five-year period. No interest is due on the first-year's payment, but interest is paid on the balance owed to STRS at the end of the second year at a seven percent annual rate. The compounding rate

on retirees' salaries which would have been obligations of BGSU had they not retired would be equal to the annual percentage salary increment. Whereas under the original ERI plan, the annual salary increment rate was about equal to the interest charged by STRS, this is not necessarily true for future projections. Our assumption is that the annual interest charge exceeds the salary increment rate by one percent each year.

The replacement rate of retired faculty is given by "r". Replacement salary as a percent of retiree's salary is given by "g". The product of r times g is k, or the ratio of total replacement salaries to total retirees salaries. (Under the 1984-5 ERI plan, $r = 0.647$; $g = 0.574$ and $k = 0.371$). The break-even formula becomes, therefore:²⁰

$$R/N = 0.218/(1 - k)$$

By varying either the replacement rate or the replacement salary, or both, the Administration may adapt k to the ratio of R/N in order to maintain the financial soundness of the ERI plan. If R/N exceeds the breakeven ratio, the ERI generates a net financial savings from the program. Hence, the University can minimize any financial risk from the implementation of the program by administratively varying k.²¹

The ratio of induced retirements to total retirements from 1988 through 1992 has been estimated to be as follows:

	1988	1989	1990	1991	1992
R/N	69.2%	67.0%	62.5%	65.1%	56.9%
(R)	(31.2)	(23.7)	(19.8)	(21.6)	(19.5)

Based upon an assumed average A.Y. salary of \$50,000 per retiree and a $k = 0.55$ (which is approximated by a ninety-two percent replacement rate and a sixty percent replacement salary), total savings from an annual program for a five year period beginning in 1988 is estimated below.²² Savings occur because the ratio R/N shown above exceeds the break-even ratio of 0.484.

Year	Total Savings From Each Year's Operation
1988	\$1,477,125
1989	1,034,713
1990	701,821
1991	871,354
1992	471,287

Table 4 shows the annual pattern of savings from this simulation. Note that the savings and costs for each year of the program are calculated over a five-year interval, for that is the period over which the University distributes to STRS the buyout costs. Total savings summed over each five year cycle for each year of operation up through 1992 amount to \$4.556 million.²³

Because the value of $k = 0.55$ used in this simulation is far above a more realistic value (probably of the order of 0.45), the actual savings most probably would be in excess of those estimated in this exercise. Therefore, the expected benefit - cost relationship is highly attractive to BGSU, and an ERI program on an annual basis may be attractive to other state universities.

Post Script

Since December 1986, an ad hoc Faculty Senate committee of which the author is a member, has been negotiating with the Vice Presidents of Academic Affairs and of Resource Planning to reinstitute the Early Retirement Incentive Plan at Bowling Green State University. Faculty interest in a renewal of the plan on an on-going basis has been extremely high, and decisions to retire have been postponed until the issue has been settled. An average of only three faculty members per year have retired since 1984-85. In August, 1988 the Vice-Presidents have recommended to the President, and he has concurred with their recommendation, that the ERI be reinstated in January, 1990 with a maximum of four years of service credit to be purchased by the University. Moreover, to maintain a reasonable ratio of retired faculty teaching supplementarily for one-term to full-time faculty, the reinstated program would allow only up to three years of post-retirement teaching at the option of the faculty. The recommendation is under consideration by the Faculty Senate and modifications may be proposed.

ENDNOTES

1. The author wishes to thank Drs. Bart Brennan, Chris Dalton, Michael Doherty, Angela Lindlay, Harold Lunde, Paul Mueller, Leo Navin

and William York, all of BGSU, for their advice and assistance in this study. Errors and omissions, however, are the responsibility of the author.

2. A 1987 study of the Pennsylvania public university system, which in 1982 had moved back the mandatory retirement age to 70, revealed that the average retirement age was not affected by this change in the mandatory retirement age. About two-thirds of the faculty continued to retire by age 66. See "Personal and Professional," Chronicle of Higher Education, December 16, 1987, p. A11.

3. Ibid. p. A11.

4. See "Labor Letter," Wall Street Journal, Tuesday, March 8, 1988, p. 1. "People retire when they think they can afford it."

5. Ohio Revised Code, Sec. 3307.35.

6. Mimeographed report of the Ohio State Teachers Retirement System, April 23, 1986, p. 17. By June 30, 1986 the number of institutions with ERI plans had increased to 308 out of a possible 789. STRS, 1987 Early Retirement Incentive Survey, Columbus, September 1987, p. 4.

7. Only Miami University purchased three years or less of service credit, as did the North East Ohio University College of Medicine. The purchase of even one or two years of service credit can induce early retirement for a teacher with twenty-nine or twenty-eight years of service, respectively. The Ohio retirement system carries a heavy penalty for a teacher retiring with less than thirty years of service or before age sixty-five. For example, a teacher age 58 with twenty-eight years of service who retires will receive as retirement pay only 50.4 percent of her final average salary. A purchase of two additional years of credit would allow her to retire at the same age with sixty percent of her salary. At age fifty-eight and with twenty-nine years of service, she would receive as retirement pay only 55.1 percent of her final average salary; a purchase of one year would increase her retirement pay to sixty percent. A five year purchase plan for

teachers fifty or over effectively converts the pension plan into a twenty-five year one in order for the retiree to receive the non-discounted, full benefit of two percent for each year of service. The 1987 STRS survey reported that 75 percent of the retirees would not have been eligible to retire if the ERI plan had not been offered, p. 22.

8. The 1987 STRS survey reported that more than 21 percent of responding employers may readopt another plan within five years and another 20 percent said they would implement another plan as needed. Hence, over 41 percent of employers would consider readopting ERI. (p. 7.)

9. *Ibid.*, p. 23.

10. In October 1986, STRS increased the buyout rate by almost 20 percent. The 5-year buyout ratio under the new formula is estimated to be 1.75.

11. The annual percentage salary increments given for 1985-86 and 1986-87 were used for these years. For the remaining four years, annual increments were estimated at seven percent.

12. The University assumes all retirees taking advantage of SRP will teach for the full five years that they are eligible. Fifty-six of the 68 took advantage of SRP in 1985-86; 59 in 1986-87. The SRP plan has been in place since 1981. About 85 percent of those retiring elect SRP, and those on SRP have taught for an average of 3.5 years. (For all retirees, the average is 2.98 years.)

13. Replacements totaled 43 in 1985-86 and in 1986-87 (or 63.24%); 44 were replaced in 1987-88 (or 64.7%). With SRP, to maintain equivalent full-time faculty, only about 60 percent of retirees need initially to be replaced until the retiree expends his SRP option.

14. If a faculty member were motivated to retire early solely on the basis of monetary gain, my calculations under the pre-1987 tax law show that it pays the retiree to advance his retirement by about 3.5 years because of ERI. Because STRS payments, beginning in 1987 are no

longer completely tax exempt in the first two years or so after retirement, the retiree's take home income would be reduced, and the advancement of retirement may be reduced. There is some evidence that ERI induced teachers to retire early by as much as 3.66 years in A.Y. 1984-85 and by 4.5 years in A.Y. 1985-86. STRS 1987 Survey, pp. 4, 18.

15. The net cost may well be negative which would represent a savings to BGSU. Because the salary increment rate in 1985-86 was 8% and in 1986-87 was 8.5%, with an estimated increment of 7 percent for the remaining four years, the average compound rate of increments is 7.4 percent. The discount rate is 7%, which is the rate that the University must pay STRS on its deferred buyout payments. Thus, the present value of the amount that the University would have had to pay when the early retirees normally would have retired exceeds the amount it had to pay with early retirement -- a savings.

16. The University in subsequent calculations based on the model developed in this paper has estimated summer salaries to be 15 percent and fringe benefits to be 17.25 percent of A.Y. salaries.

17. The distribution between the 68 retirees who normally would have retired and the number who have been induced to retire by ERI for the applicable years is as follows: (18 retired in 1984; another 50 retired in 1985).

Cumulative number normally retiring						
84-85	85-86	86-87	87-88	88-89	89-90	
6	17	26	33	41	49	
Cumulative number induced to retire						
84-85	85-86	86-87	87-88	88-89	89-90	
12	51	42	35	27	19	

18. November 12, 1986.

19. An alternate method is to use the average of two formulas to compute projected retirement age without ERI, which recognize that retirement either (a) before age 65 or (b) before 30 years of service in STRS has been accumulated carries with it substantial discounts in retirement pay. (In the BGSU case, thirty-two of the 68 retirees actually had 30 or more years of service at the

time of the ERI plan. Undoubtedly, since fourteen were in their fifties and another thirteen were between 60 and 65, retirement with thirty years of service is not automatic. Hence, many of the retirees were induced to retire early).

Formula A:

Age 65-(STRS years of service-30)

Formula B:

Current age+(30-STRS years of service)

In Formula A, if STRS service is 30 years or less, zero is taken as the value in parenthesis. In Formula B, age 70 is a maximum allowable age. The actual age at retirement is then subtracted from the average projected age of retirement to estimate the number of years of induced retirement. These induced years are summed and divided by the number of retirees. The result is 3.16 years of induced retirement per retiree under the 1984-85 program, which is undoubtedly a conservative estimate. See also note 14.

20. B=

$$B = \frac{\text{Total buyout costs}}{\text{Retirees total A.Y. salaries}}$$

$B_{85} = 1.495$

Let S = average retiree A.Y. salary

SS = S plus summer school (S x 1.2)

SSF = SS plus fringes (SS x 1.17)

Annual average savings less annual average costs equals net annual savings.

This reduces to: $R \times (SSF - kSSF) =$

$$\frac{1.5 \text{ SSF}(1.01)^2 N}{5(1.2)(1.17)}$$

which simplifies to:

$$R/N = 0.218/(1-k)$$

<u>r</u>	<u>g</u>	<u>k</u>
0.9	0.6	0.54
0.8	0.6	0.48
0.7	0.6	0.42

"k" = $\frac{0.55 \quad 0.48 \quad 0.42}{.484 \quad .419 \quad .376}$
Breakeven ratios

21. The Vice President of Academic Planning has used the formula to estimate the number of years of induced retirement (t) in order to permit the University to break even with a variety of assumed values of k. The reformulation divides the buyout cost B by t, the years of induced retirement. With B = 1.75 and S/SSF = 1/1.32, the formula for breakeven induced years of retirement (t) is:

$$t = B \frac{S (1.01)^2 1.75(1.0202) 1.353}{SSF (1-k) 1.32 (1-k) (1-k)}$$

For example, for r = 75% and g = 60%, t = 2.46 years.

22. Since r = .92 is exceptionally high (an r = .75 or r = .65 are much more reasonable), the savings in Table I are conservative estimates.

23. Since the total number of years represented in Table 4 is nine, the average annual savings over this interval is about \$500,000. Under the revised value of B and with a lower summer salary percentage, annual savings would be closer to \$400,000.

TABLE 1

NUMBER OF PUBLIC EDUCATIONAL INSTITUTIONS IN OHIO UTILIZING THE EARLY RETIREMENT INCENTIVE PLAN OF STRS, 1983-1986

Type of Institution	Number of Years of Service					Total	Length of Time Plan Was in Operation				
	Credit Purchased						1 Year or Less	1.1-1.99 Years	2-2.99 Years	3.0-4 Years	To 1999
	1	2	3	4	5						
Public Schools	24	79	103	17	56	279	166	60	39	11	3
Technical Inst.		1	1		1	3	2	1			
Community Col.			1		1	2		1	1		
Colleges & Univ.			2		6	8	2	4		1	1
	24	80	107	17	64	292	170	66	40	12	4

Source: Report of Ohio State Teachers Retirement System, April 23, 1986.

TABLE 2

NUMBER OF STATE INSTITUTIONS THAT HAVE REINSTATED THE EARLY RETIREMENT INCENTIVE PLAN OF STRS, 1983-1986

Type of Institution	Continuation of the Plan	Reinstatement of the Plan After a Lapsed Interval	Revision of Plan-Years of Credit Purchased		
			No Change	Years Increased	Years Reduced
Public Schools	23	21	22	16	6
Technical Institute	-	--	--	--	-
Community College	2		2		
Univ. or College	—	1	—	1	—
Total:	25	22	24	17	6

Source: Report of the Ohio State Teachers Retirement System, April 23, 1986

TABLE 3
STATUS OF EARLY RETIREMENT INCENTIVE PLANS OF
TWELVE STATE UNIVERSITIES IN OHIO, 1988

University	STRS - PLAN					Number of Participants	Supplemental Teaching Beyond Retirement at Faculty Option
	Yes	No	Maximum Years Purchased	Begin	End		
Akron		X					No
Bowling Green	X		5 ^b			72	Yes-up to 5 Years or Age 70, which ever is first.
Central State		X					No
Cincinnati		X ^a					No
Cleveland	X		5			50	Yes
Kent	X		5			94	No
Miami	X		3			33	No
Ohio State	X		5 ^c	4/84	10/88	477 ^c	
Ohio Univ.	X		5			54	No
Toledo	X		5	12/83	1/99	94	Yes-To Age 70.
Wright	X		5	9/87	8/88	48	No
Youngstown		X					No

Source: Bowling Green State University, Office of Resource Planning and Budgeting, March 28, 1988.

^aSince 1981-82, University of Cincinnati has had an AAUP early retirement incentive plan for AAUP members. The University purchased annuity credit for 13 faculty in 1987.

^bThe President of BGSU has proposed on August 22, 1988 a reinstatement of the ERI plan with a buyout of service credit for up to four years on a continuing year to year basis.

^cThe original OSU plan for 1984-85 called for a purchase of 3 years of service credit. Faculty who elected this original plan numbered 151; another forty-one elected the renewed, upgrade plan in 1985-86; and 285 elected the plan in the two year period 1986-88.

TABLE 4

NET SAVINGS FROM ANNUAL ERI DISTRIBUTED OVER THE
FIVE YEAR BUYOUT PERIOD FOR EACH YEAR OF
OPERATION, 1988-1992*

Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	Totals
1988	\$308,071	301,751	295,443	289,048	282,770					\$1,477,125
1989		216,869	211,913	206,957	201,965	197,009				1,034,713
1990			149,253	144,815	140,377	135,907	131,469			701,821
1991				183,580	178,932	174,284	169,603	164,955		871,354
1992					103,875	99,073	94,271	89,435	84,633	471,287
Totals	\$308,071	518,626	656,609	824,436	907,919	606,273	395,343	254,390	84,633	\$4,556,300

*Estimated, December 11, 1986